

## Goat Polio

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The official name for Goat Polio is "Polioencephalomalacia". It is a nutritional /metabolic disease that affects primarily ruminants, including goats. Metabolic means relating to metabolism, the whole range of biochemical processes that occur within the goat's rumen. In ruminant animals that means processing the food the goat has eaten. This disease has become more prominent in goats in the U.S. that are under intensive management conditions when they are fed more concentrated feed to get them to grow faster.

The main cause of this disease is either a thiamine deficiency or the stopping of the thiamine activity in the rumen. Thiamine, or vitamin B1, is a major part of the rumen processing that occurs with carbohydrates and amino acid in the rumen. Decreased processing activity leads to cell death in the brain and swelling from excessive accumulation of watery fluid in brain cells and tissues. The symptoms originate from the damage to the brain.

The thiamine is produced in sufficient amounts by specific bacteria in the goat's rumen. Any changes in the normal environment in the rumen may lead to reduced production of thiamine in the rumen. Normally something else has occurred to upset the goat's processing of its food intake and that causes the Goat Polio to occur.

### Causes

- Things that can cause the rumen to not produce the required thiamine are:
- Rumen acidosis cause by excessive concentrate feeding and sudden feed changes.
- Moldy feeds.
- Thiabendazole - active ingredient in some wormer medication like Thibenzole Sheep & Goat Wormer
- Levamisole - wormer
- Some types of ferns
- Following a shot of an antibiotic. - the antibiotic is used for killing bad bacteria but may also kill the good bacteria in the rumen that helps process the feed that results in thiamine. ALWAYS FOLLOW UP ANY ANTIBIOTIC SHOT WITH A TREATMENT OF "PROBIOS" some similar product that will repopulate the rumen with good microbes.
- Overdosing of Amprolium - ingredant in medication such as CORID for prevention of coccidiosis: Amprlium is a thiamine analog, competitively inhibits the active transport of thiamine.
- Feeding horse type of sweet feed with high molasses content.

## **Signs of Goat Polio**

- Depression
- Not eating and/or diarrhea
- Early neurologic dysfunction such as
  - excitability
  - elevation of the head
  - staring off into space
  - aimless wandering
  - circling
  - muscle tremors
  - apparent blindness
- As the disease progresses
  - Involuntary eye movement
  - extensor rigidity - the muscles that extends or straightens a limb or body part
  - convulsions

## **Diagnosis**

Early signs of depression and diarrhea are also common in enterotoxemia and pregnancy toxemia. If the animal is not close to kidding, you can rule out the pregnancy toxemia. The blindness and/or extensor rigidity are strong symptoms for goat polio instead of enterotoxemia. The extensor rigidity is also a sign of tetanus. If the animal is circling, that is also a sign of listeriosis. The best thing to consider is what lead up to the symptoms and quickly watching for any signs of blindness. Look at the list of what can cause the goat polio and consider if any of them have occurred recently. Also, it will not hurt to treat an animal with tetnus or listeriosis with the treatment for goat polio.

## **Treatment**

The only effective treatment is thiamine. Thiamine is a prescription only medication and must come from your vet. How well the animal will respond is dependant upon the severity of the disease at the time the animal was treated. The recommended dosage according to the "Goat Medicine" book is 10 mg/kg b.w. repeated every 6 hours for 24 hours. It is recommended that the initial dose be given intravenously and the rest given under the skin or in the muscle.

You need to be careful on the dosage because the thiamine comes in different strengths and the cc's given change according to the bottle you get.

Here is a link to info on understanding how to convert medicine to proper dosage.

## Dosage Conversions

### **Treatment recommended by Coni Ross**

Thiamine and Penicillin. I usually give 10cc SQ of Penicillin, and 10cc oral of Penicillin on day one, to kill the bad bacteria. As for the thiamine, I give 1 gram as a first dose: 500mg SQ, and 500mg IM. The SQ takes longer to work but sustains the blood levels longer. On day 2, I restart the rumen with Calf Pac, and continue the Thiamin each day until the goat is well.

(comment by Jack Mauldin --- the concept of Coni's treatment is that something in the rumen is wrong. The penicillin given orally is to kill whatever bacteria is in the rumen to start it over. The killing of the bacteria in the rumen is also killing the good bacteria needed and that is being replaced by the Thiamine and calf pac. The calf pac can be replaced by Probios)

### **Another recommendation that uses vitamin B1 instead of Thiamine.**

The dosage for B1 (thiamine) is 500 mg per 100 weight every six hours, so check any B vit. to make sure you give your goat enough of the B1, and as you say overdosing will not hurt them, they urinate out what they don't need. Usually have to give this amount, every six hours, for a week at least. Sometimes improvement is immediate and sometimes it takes at least a week. Consider keeping Fortified B on hand at all times because vet may not have Thiamine. Fortified B has 100 mg per cc of B1 in it. It can be given orally but the first day but I inject under the skin to make sure they get enough.

Any time the goat's rumen gets upset, goat polio can happen. Consider worming and give penicillin (5cc per 100 lb. weight) just in case it is Listerosis and will give penicillin once a day for five days, give a probiotic (Probios or even a yogurt with live culture) to make the rumen more efficient.

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### Polioencephalomalacia (polio)

Polioencephalomalacia (polio) in ruminants is caused by a thiamine deficiency and/or sulfur toxicity. Other causes include improper feeding, feeding too much grain, or anything that disrupts the health and well-being of rumen microbes, such as chronic or acute acidosis or indigestion. The disease is seen more in winter in North America, primarily due to increased grain feeding to meet increased maintenance energy needs.

**Signs:** Signs of illness are related to softening and swelling of the grey matter of the brain and include excitability, stargazing, muscle rigidity, uncoordinated staggering and or weaving, circling, diarrhea, muscle tremors, pressing head against wall and apparent blindness. A rapid, involuntary side-to-side motion of the eyes may also be noted. As the disease progresses, convulsions may occur, and if untreated, the animal generally dies within 24-72 hours.

**Treatment:** Thiamine is the only effective therapy, and treatment can result in improvement within two hours if the disease is caught early. Multiple doses (0.25cc/10-pound body weight three to four times day) of thiamine and other actions based on veterinary recommendations are required for best outcomes; these recommendations will vary based on the underlying cause of the disease. Do not administer vitamin B-complex because there is insufficient thiamine to be helpful. Antibiotics may be indicated depending on the underlying cause.

**Control:** Control measures include feeding as much roughage and as little concentrate in the diet as needed to meet nutritional requirements and performance goals. Moldy feeds and high-carbohydrate feeds should also be minimized. Prevent accidental access to unlimited amounts of carbohydrates, such as grain bins, feed sacks or tree fruit drops. In high-risk herds where animals are on high grain diets, supplementation with thiamine mononitrate, probiotics or brewer's yeast may be indicated for prevention.

<http://www.extension.org/pages/22434/polioencephalomalacia>