

Exocrine Pancreatic Insufficiency

ABOUT THE DIAGNOSIS

The pancreas is an organ in the abdomen that produces substances that are critical for digestion and for the body's normal metabolism. Microscopically, the pancreatic tissue is composed of two intermingled parts: **exocrine** and **endocrine**. *Exocrine* pancreatic tissue is responsible for producing and releasing enzymes (digestive juices) that help to break down and digest food in the intestine. Appropriate digestion permits nutrients to be absorbed and used by the body, and in this way, the pancreas is essential for transforming food into energy and building blocks that the body can use. The *endocrine* pancreatic tissue produces hormones that circulate in the bloodstream and are necessary for vital processes such as blood sugar (glucose) control.

Cause: In dogs, pancreatic exocrine insufficiency is caused by degeneration (atrophy) of the cells that produce digestive enzymes (pancreatic acinar cells, which are part of the exocrine pancreatic tissue). The exact reason why these cells waste away is not known. Exocrine pancreatic insufficiency (also called EPI, pancreatic exocrine insufficiency, or PEI) may be genetically transmitted in German shepherds and rough-coated collies, and symptoms of the disease may be evident by 2 years of age in these breeds. However, this disease can develop in any dog breed. In cats, pancreatic exocrine insufficiency is thought to be caused most commonly by chronic inflammation of the acinar cells of the pancreas and is very rare.

Although dogs and cats with this disorder tend to have healthy to ravenous appetites, weight loss is common. The body cannot utilize the food that an animal eats because the absence of pancreatic enzymes (digestive juices) means the food is not properly digested or absorbed. That is, the actual intake of food is adequate or even higher than normal, but the food is not taken up properly and is excreted in the feces largely undigested. As a result, animals with pancreatic exocrine insufficiency may ingest their own feces (coprophagia) or unusual material such as dirt (pica) in an attempt to compensate for nutritional deficiencies. A thin body condition and a poor haircoat are common results. The volume of feces (stool, excrement, bowel movements) may be normal or increased, and feces may be gray or yellow. Frequent bowel movements, diarrhea, and flatulence also commonly occur as part of exocrine pancreatic insufficiency.

Diagnosis: Your veterinarian will perform a thorough physical examination of your dog, and take a complete medical history of your dog from you, asking you questions such as the duration and appearance of symptoms you have observed, whether you have given any medications and if so, whether any effect was apparent, and so on. To determine your pet's general health status and to rule out other problems in the abdomen that could cause similar symptoms, routine blood tests such as a complete blood test (CBC) and blood chemistry profile, a urinalysis, and x-rays or ultrasound exam of the abdomen (belly) and chest may be performed. These are often necessary because the symptoms of exocrine pancreatic insufficiency are nonspecific; many other diseases may imitate exocrine pancreatic insufficiency, and since they are more common, they often are checked for using the tests just listed. Microscopic analysis of a sample of your pet's feces may be done to check for parasites (a common "impostor" that causes symptoms identical to pancreatic exocrine insufficiency) and to look for undigested fats and starch. The most reliable test for pancreatic

exocrine insufficiency is a blood test that measures the circulating levels of pancreatic enzymes (substances that are produced by the pancreas for digestion). This test is called the serum trypsin-like immunoreactivity (TLI) assay. Normal healthy individuals have a certain background level of these enzymes in the bloodstream at all times, whereas patients with pancreatic exocrine insufficiency are mostly or entirely deficient in the enzymes, as the blood test reveals. Rarely, some results are indeterminate, and a second sample may need to be tested at a later date.

LIVING WITH THE DIAGNOSIS

When it is identified early and treated properly, pancreatic exocrine insufficiency is not a life-threatening disorder. Most dogs and cats diagnosed with pancreatic exocrine insufficiency respond well to treatment (see [Treatment](#)), and once treatment is underway, most individuals enjoy an absolutely normal quality of life and normal life expectancy. The pancreas often does not regenerate when it is affected by exocrine pancreatic insufficiency, and treatment is typically required for the life of the pet. Relapses may occur and can be caused by forgetting to give the enzyme supplement treatment or the development of complications such as bacterial overgrowth in the intestine or other digestive upsets that occur from time to time.

TREATMENT

Treatment given every day is essential and simple. It consists of adding replacement pancreatic enzymes directly to the food because the pancreas does not make the enzymes when affected with exocrine pancreatic insufficiency. Pancreatic enzymes are simply supplemented in the diet. These enzymes are available as powder, capsules, and tablets, and the treatment simply consists of putting the enzymes in/on the food, every meal, just before feeding your dog. Diet modification may be necessary as well since some foods are better tolerated than others when patients have exocrine pancreatic insufficiency (consult your veterinarian). Antibiotics or vitamin supplements may sometimes be given for the first several weeks of treatment. Cats may require additional supplements. Your veterinarian can discuss these nutritional requirements with you.

Your dog's or cat's treatment protocol may need to be changed several times before the best regimen is found. Your veterinarian can tailor treatment for your pet as needed, and periodic rechecks are needed for this reason.

DOs

- Realize that pancreatic exocrine insufficiency is not a life-threatening condition when it is diagnosed early and treated and monitored properly. Affected pets generally live normal lives with enzyme supplementation on every meal.
- Inform your veterinarian if your cat or dog has ever been diagnosed with a medical condition and is taking medication, as these could be affected by exocrine pancreatic insufficiency.
- Give medication and enzyme supplements exactly as directed by your veterinarian, and if you are concerned about possible negative effects, discuss them with your veterinarian immediately rather than simply discontinuing the treatment. It is a mistake to feel that the treatment can be stopped when the symptoms resolve, because exocrine pancreatic insufficiency is generally permanent.
- If you have several dogs that run together in a yard and you are having trouble determining which dog has abnormal feces (e.g., diarrhea), you may feed each dog half a nontoxic wax crayon

(different colors—keep track of who gets which one), and the colors will appear in the feces to identify whose is abnormal.

- If treatment is not working or symptoms are different from those expected for exocrine pancreatic insufficiency, you may want to speak to your veterinarian about seeking a second opinion with an internal medicine specialist (directories: www.acvim.org or www.vetspecialists.com [U.S. and Canada]; www.ecvim-ca.org [Europe]).

DON'Ts

- Do not postpone visiting your veterinarian if you observe any symptoms of pancreatic exocrine insufficiency in your dog or cat. Prolonged malnutrition can have severe effects.
- Do not give medication that you have at home that has been prescribed for human use; some of these may interfere with treatment and cause even more severe problems.

WHEN TO CALL YOUR VETERINARIAN

- If you cannot keep a scheduled appointment
- If you are unable to give pancreatic enzymes or medication as directed
- If your dog or cat is not improving after treatment begins

SIGNS TO WATCH FOR

- As general signs of illness that could indicate uncontrolled exocrine pancreatic insufficiency, or a totally different disorder that partially mimics exocrine pancreatic insufficiency: lethargy, weakness, vomiting, hiding more than usual, aggressiveness, and other behavior changes.
- Signs of uncontrolled exocrine pancreatic insufficiency, warranting a recheck and adjustment to treatment (increase or change

enzyme supplementation): weight loss despite an increased appetite; increased volume and/or frequency of feces; eating feces, dirt, or other foreign materials; flatulence; frequently “growling” stomach (borborygmus); and poor haircoat quality.

ROUTINE FOLLOW-UP

- Follow-up appointments are typically scheduled to monitor progress. Treatment may be adjusted based on findings at follow-up visits. Once the condition is stable and symptoms are gone, rechecks are usually annual or semiannual.

Other information that may be useful: “How-To” Client Education Sheet:

- How to Collect a Fecal Sample



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