Exocrine Pancreatic Insufficiency (EPI) in Dogs
By Dr. Karen Becker

Hi, I'm Dr. Karen Becker. Canine exocrine pancreatic insufficiency, which is usually shortened to EPI, is a mouthful of a name for a disorder in which the pancreas doesn't produce enough digestive enzymes. These enzymes include amylase to digest starches, lipase to digest fats and proteases to digest protein. Without sufficient quantities of these enzymes, the food that is eaten is poorly digested and poorly absorbed. EPI is most often seen in German shepherds, a breed predisposed to this disorder, but it can occur in any breed or mixed-breed dog. Thank goodness it's very rare in kitties.

When EPI develops in a young dog, it's usually the result of pancreatic acinar cell atrophy, which is a decrease in the number of enzyme-producing cells inside the pancreas. In older dogs, EPI is oftentimes secondary to chronic pancreatitis, which is inflammation of the pancreas. Chronic pancreatitis, in turn, indicates the potential that the dog could also have diabetes. The severity of EPI varies from very mild to incredibly severe.

Symptoms of Exocrine Pancreatic Insufficiency

Some dogs show no symptoms for months or even years. Common symptoms of the disorder include significant weight loss despite a constant hunger. Sometimes it's overwhelming hunger. These dogs are famished. Regardless of the amount of food that they eat, dogs are still constantly hungry and consistently lose weight. Many of these dogs poop more frequently, and very frequently in some cases. The stools can be really, really large, with yellowish or a grayish color from undigested food.

Coprophagia, which is poop eating, and/or pica, which is eating abnormal foods, is also incredibly common. Noisy digestion and a lot of flatulence or gas is also common, as well as intermittently having watery diarrhea or vomiting is actually also a symptom. Not all dogs have all of these symptoms. I believe that this condition is actually oftentimes overlooked by veterinarians. If you have a dog that has a few of these symptoms, or even one of these symptoms that has never gone away that is getting progressively worse, I believe it's worth testing for.

The incomplete digestion that results from EPI causes constant large amounts of fermenting foods in the small intestine. This triggers a secondary condition called SIBO, or small intestinal bacterial overgrowth. SIBO is also now referred to as SID, small intestinal dysbiosis, in which the population of bad bacteria overwhelms the ratio of good bacteria in the lining of the small intestine.

Dysbiosis can further impair nutrient absorption and also depletes the body's reserves of vitamin B12. Belly rumbling, noisy gas, diarrhea, GI upset, intermittent nausea and also sometimes vomiting are common symptoms in EPI, and also can be present in the condition of SIBO as well.

The severity of this disease ranges from very mild to absolutely terrible. In moderate to severe cases, muscle wasting is incredibly common, because in an EPI dog's belly, they can't absorb the nutrients necessary to have good muscle tone. This results in a dog having incredibly poor muscle tone. They actually look like they're on really bad food or maybe you're not providing enough food. They can have a really hard time gaining weight.

You'll have people say, "Oh my gosh. What's wrong with your dog?" or "What type of food are you feeding your dog?" You could be feeding fantastic food, but your dog isn't getting the nutrients that they need because the GI tract isn't allowing digestion.

Juvenile dogs affected with this condition can have bone problems actually, because of lack of nutrient absorption. This can result in developmental abnormalities, including teeth issues that can be slightly smaller than average and actually a higher than average incidence of hip dysplasia.

Of course, the end result is basically malnutrition, despite the fact that the dog is eating. Every part of the body can be damaged from the malnutrition. This includes some nervous system issues, some brain issues, which can result in abnormal behavior, including increased anxiety, fear and, actually, food aggression. Skin and coat issues are also incredibly common, including excessive shedding, flaking and brittle, thin hair.

Because many dogs with EPI are essentially starving despite the fact they're eating, they're constantly hungry. They can appear almost feral. Food can come out — that's when the food aggression comes in. They'll go to great lengths to steal food. Oftentimes, when they get outside, they'll gorge on feces, grass, dirt or other inappropriate substrates in an attempt to gain nutrients that their bodies are desperately seeking.

It's really important for owners to understand that these dogs' bodies are literally nutrient-deficient and being nutrient-deprived, which is why they're eating inappropriate items. Oftentimes people will see this as a behavior problem first before they recognize it's a really significant medical problem.

As the disease progresses, the deterioration speeds up. Some dogs eventually lose all interest in wanting to do anything. They feel terrible. They just want to sleep all the time, or they can actually end up hiding. This is obviously incredibly frustrating and heartbreaking for owners, who feel helpless as they're watching their dog basically waste away in front of them.

If a dog with EPI goes undiagnosed and untreated, her body, literally from nose to tail, will be deprived of all of the nutrients necessary for growth, renewal and maintenance. As you can imagine ultimately, she'll either literally starve to death or many of these dogs can die of organ failure if they go undiagnosed for too long.

Diagnosis and Treatment for Exocrine Pancreatic Insufficiency

Unfortunately, since chronic loose stools are oftentimes the first symptom of EPI in dogs, most veterinarians who aren't dealing with just German shepherds, who tend to be predisposed to this disorder, tend to wantonly prescribe antibiotics. Oftentimes, the loose stools will temporarily disappear, because these antibiotics knock down the bacterial overgrowth or the SIBO. But the underlying disease has not been addressed.

When the antibiotics are discontinued, the loose stools come back. When the loose stools return and the dog continues to lose weight, many veterinarians just say, "Just stay on antibiotics forever, because the dog may have inflammatory bowel disease, or IBS." In some cases that I've had referred to me, I have had animals actually that have undergone endoscopy, which is where they pass a camera down. They've taken biopsies. They've done all of these thousands of dollars-worth of tests before they've

even checked for EPI, which is really sad to me. Because as I mentioned, I believe this is a much more common disease than veterinarians are actually recognizing or testing for.

The confirming diagnostic test for EPI is a TLI test, which is trypsin-like immunoreactivity, which is a blood test that measures the dog's ability to produce digestive enzymes. Most samples are sent to the Texas A&M University. They have a GI lab, which has recently revised their reference ranges. Values now below 2.5 micrograms per deciliter are now considered completely diagnostic for EPI. Values between 3.5 and 5.7 may suggest subclinical pancreatitis that can lead to EPI.

I strongly recommend beginning GI support when dogs fall into this grey zone, because they need the support at that point to prevent them from getting worse. The other thing I see is that we weren't trained in veterinary school to begin treatment for EPI until dogs are below 2.5. I totally disagree with that as a proactive veterinarian.

If you test your dog and your dog comes back between 2.5 and 3.5, which means your dog is in the process of making less and less enzymes, Texas A&M recommends that you repeat the TLI after a month of treatment, and I completely agree with this. I also recommend running a B12 test, which is called a cobalamin test, which checks for B12 deficiency at the same time as you do the TLI test.

Some dogs in the grey zone can recover pancreatic function by instituting treatment before acinar cell failure occurs. My recommendation is to treat dogs that are in that grey zone, which means they're below 5.7 micrograms per deciliter. These dogs need, at a minimum, digestive enzyme and a probiotic at every single meal.

Food should be fresh, which means you have to take them off an entirely dead, inorganic over-processed diet, and put them on a fresh food diet that is a low-residue diet and free from dyes, pesticides, genetically modified organisms (GMOs) and fillers, as well as additives and preservatives. You want to give them whole, fresh, clean and real food.

Ideally, working with a veterinarian who is well-versed in helping animals recover from leaky gut or dysbiosis is the very best option, because those of us who are functional medicine doctors, we have a whole arsenal of gastrointestinal (GI) protocols that we can use to help your dog recover.

As soon as a dog is diagnosed with EPI, he will need to be given pancreatic enzymes with every meal. Some dogs, in fact many, many dogs that are below 5.7 that don't have instantaneous recovery because of this chronic pancreatitis issue, they will need enzymes for the rest of their life. Absolutely, dogs below 2.5 are for-lifer enzyme therapy dogs.

The supplement must contain pancreatin, which is an animal-based pancreatic enzyme that provides protease, lipase and amylase. I recommend adding these enzymes to the dog's food and letting it sit at room temperature for at least 20 to 30 minutes before feeding to basically predigest the food. Probiotics are also really important for these dogs and should be continued long-term.

In dogs with low vitamin B12 or low cobalamin, cobalamin injections will be needed. Vets oftentimes can show owners how to do this at home. I routinely show my clients how to give B12 injections. They're simple and easy. They're given once a week for six weeks, and then about every other week, and then monthly thereafter. But how you know when your dog's B12 schedule would become maintenance is by regularly rechecking B12 levels.

If the pancreatic inflammation is being exacerbated by highly processed food, which is kibble or canned food, which is almost always the case, the best thing you can do is switch to a nutritionally balanced, home-cooked diet for your dog, or a commercially available, human-grade, gently cooked diet with no unnecessary fillers or preservatives.

As gut health improves, the vast majority of EPI dogs do very well on a nutritionally balanced, well-blended, raw food diet due to the natural enzymes that are present in the food. Anytime you cook the food, digestive enzymes are killed. We start dogs on cooked foods, and then we move them to raw foods. You have to remember that these dogs need intensive, reparative nutrition protocols to make up for their maldigestion and malabsorption, so food choices really matters.

I always recommend transitioning these dogs slowly off of their highly processed food onto fresh, gently cooked fresh foods, and then onto well-blended raw foods. Once again, you want to do this once dogs are stable, because it's important that fresh foods are instituted after your dog is feeling better. Going from gently cooked food to raw food is often the difference between dogs doing pretty good and then becoming really, really good. In fact, raw food diets often trigger this dramatic improvement that really can't be met with any other type of food.

You'll note that I say "well-blended" because these dogs do not tolerate large pieces of bone, chunks of veggies or hunks of meats. The food need to be finely ground to reduce digestive stress. Fresh food diets must be nutritionally complete, because EPI dogs are obviously malnourished. Oftentimes, they have zinc deficiencies and vitamin E deficiencies that are quite blatant. It's quite important to know that the diet that you're feeding has adequate or sufficient quantities of all the nutrients that your dog requires.

Most dogs with EPI do better on a diet that's very low in fiber — less than 4 percent — because fiber interferes with the function of the digestive enzymes. It's important that you keep a low-fiber diet, which is why most commercial diets that are highly processed are not appropriate. You'll also have to remember that really high fiber diets can inhibit absorption of certain nutrients, which is why all of these dogs do best off of kibble.

In addition to enzymes, probiotics are really critical for restoring these dogs' microbiomes. You want to help balance your dog's microbiomes and prevent this condition of SIBO from recurring. Once these dogs are stable, EPI dogs can usually benefit from additional supplements, like fish oil or krill oil, as a source of omega-3 fatty acids, as well as coconut oil. Coconut oil contains lauric acid, which has natural antibacterial and antiviral properties, which is great for the gut.

Discontinuing supplements and GI support for EPI dogs means, eventually, all of the symptoms will return. I don't recommend doing this. However, many dogs, once they're stable, and once food becomes medicine, they actually can have their supplement protocols reduced to the lowest possible necessary dose to maintain normal bowel health.

The goal of the stools of the EPI dogs is to have a well-formed, normal-looking stool with the color of dark chocolate that's easily pick-uppable. It's not supposed to fall apart. The nausea, gas, bloating and all those GI sounds should be totally gone.

Anything less than a normal dog that's being well-managed with supplements means that the dog is probably still having some digestive issues. That's really where a trial-and-error protocol comes in, which

is best done in partnership with a functional medicine vet, who is well-versed in treating dysbiosis, because that's where we can offer you a change in protocol. And then if your dog isn't quite right, we'll switch the protocols again. If she's still not right, we'll switch them yet again.

It could be that your dog needs fewer enzymes or a little bit more enzymes, or that the enzymes need to sit on their food more or less, or there could be something in the diet that needs to change. Oftentimes, EPI dogs end up with food intolerances, which can be identified on a saliva NutriScan test. If the dog gets into food that they weren't supposed to eat and if they have a food intolerance, you can see a massive flare-up of this condition. Oftentimes, intermittent small intestinal bacteria overgrowth can occur. Your veterinarian may recommend an annual TLI and B12 test just to make sure that everything is still being managed consistently.

I also don't recommend that puppies or dogs with dysbiosis or EPI be vaccinated annually. It's really important to partner with a veterinarian who will check titers instead of automatically vaccinating these dogs.

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