

Chronic Enteropathies – Canine

Frédéric P. Gaschen, Dr.med.vet., Dr.habil., DACVIM, DECVIM-CA
Dottie Laflamme, DVM, PhD, DACVN

Definition

Chronic canine enteropathies include *adverse reactions to food*, *antibiotic-responsive diarrhea* (ARD), and *inflammatory bowel diseases* (IBD), and are defined by the occurrence of chronic, sometimes intermittent diarrhea with or without vomiting associated with an inflammatory infiltrate of variable severity in the gastrointestinal (GI) mucosa, in the absence of an identifiable cause.

Key Diagnostic Tools and Measures

The typical workup differs depending on the severity of disease. It is essential to initially rule out parasite infestation with serial fecal exams or administration of a broad-spectrum anthelmintic. Dogs with mild to moderate disease can undergo sequential treatment trials with an elimination diet, followed by antibiotics, before considering a more comprehensive workup. This option includes complete blood count (CBC) and chemistry profile, abdominal ultrasound, and sampling of mucosal biopsies. Severely affected dogs or those with signs of protein loss usually benefit from an aggressive initial diagnostic approach.

Pathophysiology

Adverse reactions to food include food intolerance (a non-immunologically mediated reaction) and food allergy (IgE or non-IgE-mediated).

Dogs with ARD benefit from a change in the commensal intestinal flora or disappearance of offending bacteria secondary to antibiotic treatment. Alternatively, selected antimicrobials may themselves directly influence the mucosal immunity.

The pathogenesis of canine IBD remains largely unknown. Abnormal intestinal flora and aberrant interactions between flora and the host immune system are most likely key players as exemplified by mucosa-adherent and invasive *E. coli* which have been directly implicated in the pathogenesis of histiocytic ulcerative colitis (HUC), a specific form of IBD.

Signalment

While dogs of many breeds have been diagnosed with chronic enteropathies, some breed predilections have been identified. The incidence of protein-losing enteropathies is reported to be high in soft-coated wheaten terriers, Shar-Peis, and Norwegian Lundehunds. Lymphangiectasia occurs frequently in Yorkshire terriers. Immunoproliferative enteritis is a disease of Basenjis. German shepherd dogs are at high risk for ARD. In a recent study, dogs with diet-responsive chronic enteropathies were generally young, large-breed dogs while those diagnosed with IBD were lighter and usually older.

Key Nutrient Modifications

Chronic enteropathies are a poorly defined syndrome with multiple, often unknown, etiologies. Hence, a single diet may not be right for all cases. A large proportion of dogs with chronic idiopathic enteropathies will respond to a diet change (diet-responsive disease). Among those, many dogs will benefit from being switched to an elimination diet (novel protein source or hydrolyzed proteins). Severe small intestinal IBD can result in malnutrition and malabsorption. A highly digestible, moderate- to low-fat diet should be fed in these patients. Omega-3 fatty acids from fish oil can reduce inflammation, and some patients with IBD may benefit from a diet with increased fish oil. If lymphangiectasia is part of the syndrome, feed a low-fat diet. Medium-chain triglycerides may be used to provide additional highly digestible calories. Probiotics may be of benefit in dogs with IBD.

Recommended Ranges of Key Nutrients

| Nutrient | % DM | mg/100 kcal | % DM | mg/100 kcal |
|-------------------|---------------------------|-------------|------------------------------|-------------|
| | Recommended dietary level | | Minimum dietary requirement‡ | |
| Total dietary fat | 12–14% | 2.5–3.5 | 5.0 | 1.43 |

Modified intake of these nutrients may help address metabolic alterations induced by disease states. The recommended dietary composition is shown as percent of dietary dry matter (DM) and as g or mg per 100 kcal metabolizable energy. All other essential nutrients should meet normal requirements adjusted for life stage, lifestyle, and energy intake.

*Nutrient requirement for adult animals as determined by the Association of American Feed Control Officials

‡When necessary, e.g., in lymphangiectasia, fat may need to be restricted to below 12% dry matter, or less than 2.5g/100kcal

Therapeutic Feeding Principles

The goal of dietary therapy is to provide balanced nutrition for patients while helping to address clinical signs. GI inflammation can occur in response to dietary antigens, bacterial antigens, or other irritants. Any dietary change can result in alterations in these potential stimulants.

Dogs with chronic idiopathic enteropathies should undergo a dietary trial with a hydrolyzed or novel protein diet. Dogs may improve when fed these diets even if they do not have a food allergy (a final diagnosis of food allergy implies a clinical relapse upon challenge with ingredients from the prior diet). Improvement should be observed within 2 to 3 weeks.

A high percentage of dogs with suspected or confirmed IBD showed clinical improvement when fed either a hydrolyzed protein diet, or a diet containing 1% omega-3 fatty acids from fish oil.

For patients with protein-losing enteropathy or lymphangiectasia, a very low-fat, highly digestible diet should be used. A hydrolyzed protein diet, if low in fat, may also be of value in these patients.

Probiotics may be of value in IBD patients. By altering the GI microflora, they may change the bacterial antigens presented to the gut and may thereby reduce the inflammatory stimulus.

■ **Treats** – Treats, as well as flavored medications, should be completely omitted in dogs undergoing a dietary trial (for diet-responsive inflammation). When allowed, treats should not exceed 10% of daily calorie intake. If a dry diet is fed, kibble can be set aside to give as treats. If a canned diet is being fed, meatballs of this food can be used as is, or after broiling to create a crisper texture. For dogs with lymphangiectasia, low-fat treats may be fed. Commercial treats should contain <12% fat (dry basis). Other acceptable treats include bits of cooked chicken breast, raw or steamed vegetables, and fat-free yogurt.

■ **Tips for Increasing Palatability** – Addition of warm water can enhance the palatability of dry foods. Warming canned foods to body temperature releases aromatic compounds and can enhance palatability. Food may be sprinkled with a flavor-enhancing probiotic product.

■ **Diet Recommendations** – Novel protein diets are chosen on the basis of the dog's dietary history. Ideally, the animal should have had no prior exposure to the selected protein source. Secondary protein sources such as grains must be considered as well, as they may also contain allergenic proteins. While home-made diets may initially have some advantages, they do not provide balanced nutrition in the long term. Many nutritionally balanced products with proteins from various sources such as fish, venison, duck, rabbit, or kangaroo are currently available on the market. Novel protein diets are not inherently lower in allergenicity, so lack of prior exposure is critical. Some dogs may subsequently develop intolerance to the novel protein diets.

Hydrolyzed protein diets consist of smaller peptides that are less likely to elicit an immunologic reaction. As for novel protein diets, consider potential

protein contained in grains and other carbohydrates included in the diet. If no intact proteins are included in the diet, the diet can be used without knowing the patient's detailed diet history. While these diets are less allergenic than novel protein diets, a very small percentage of dogs may yet have an allergic response to their components.

Response to a diet change usually occurs within 2 to 3 weeks in dogs with diet-responsive chronic enteropathies. Some may be progressively reintroduced to a high-quality commercial diet after a successful elimination trial. Others will need to be fed an elimination diet on a long-term basis.

Highly digestible low-fat diets are indicated in dogs with severe protein-losing enteropathies (e.g., lymphangiectasia) and associated clinical signs. The addition of fermentable fiber to the diet provides additional benefits in dogs with chronic colitis. Fermentable fibers are metabolized to short chain fatty acids by the large intestinal flora and provide a useful source of energy. Overall, they enhance structure and function of the intestinal epithelium. Psyllium is an example of fermentable fiber that can be given as a supplement to the diet. Recommended dosages are: 0.5 tablespoon (T) for toy breeds, 1 T for small dogs, 2 T for medium dogs, and 3T for large dogs. Fiber should be added gradually (increasing to full amount over 4 to 7 days) to allow the GI microflora to adapt.

Client Education Points

- Strict dietary management of dogs with chronic intestinal disease is a central component of treatment. While this may prove challenging at times, it is essential to feed dogs exclusively with the recommended diet.
- Any treats that re-expose the dog to offending proteins may cause a relapse. This includes drugs such as chewable forms of heartworm preventative. They should be avoided during the dietary trial and until they have been shown not to induce an adverse reaction.
- Although home-prepared diets can be helpful, they generally do not provide balanced nutrition in the long term; this is why commercially available, nutritionally balanced diets are preferred.

Common Comorbidities

Moderate to severe chronic enteropathies affecting the small intestine are frequently associated with maldigestion and malabsorption due to failing intestinal function. This may result in malnutrition and weight loss. Recently, cobalamin (vitamin B12) deficiency has been documented in dogs with

chronic enteropathies. In such instances, parenteral cobalamin supplementation may be necessary for the treatment to be successful. The recommended dose in dogs with documented cobalamin deficiency is between 250 and 1,500 µg SC depending on the dog's size. Injections are administered weekly for 6 weeks, and every other week for 6 additional weeks. Regular reassessment of the dog's clinical status and cobalamin concentration is recommended to guide further treatment.

Interacting Medical Management Strategies

Antibiotics are recommended for the treatment of ARD. They greatly influence the composition of the intestinal flora which may have an impact on gastrointestinal function. The following antimicrobials are usually well tolerated: metronidazole, tylosin, or tetracycline. Enrofloxacin is the treatment of choice for HUC, a specific form of IBD.

Corticosteroids are the mainstay for the treatment of idiopathic IBD, and are often administered at high doses (immunosuppressive dose of prednisone: minimum 2 mg/kg in two daily doses). Corticosteroids are catabolic hormones and are therefore not desirable in dogs suffering from GI dysfunction and its impact on the metabolism. In cases of IBD, however, their beneficial effects targeting the immune system by far outweigh the deleterious effects they may have on the metabolism.

Monitoring

Appropriate rechecks should be scheduled to reassess the dog's condition. Monitoring body weight (BW) and body condition scoring (BCS) will help ensure the dog receives adequate amounts of food. Clinical scoring indices grading various clinical and laboratory parameters are available in the literature, and may help the veterinarian measure changes from one visit to the next (canine IBD activity index [CIBDAI] or canine chronic enteropathy clinical activity index [CCECAI]).

In case of treatment failure despite adherence to the algorithm provided here, consider the following possibilities: (1) poor compliance with treatment; (2) presence of intercurrent disease such as exocrine pancreatic insufficiency, infection with refractory enteropathogens, or hypoadrenocorticism with glucocorticoid deficiency; (3) refractory IBD which may respond to a combination therapy with additional immunosuppressive drugs such as cyclosporine, azathioprine, chlorambucil; and (4) presence of diffuse GI neoplasia.

Algorithm – Nutritional Management of Canine Chronic Diarrhea

