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SPECIALISTS**
State of the Art Care, In the Heart of the State

Inflammatory Bowel Disease (IBD)

What are the stomach and intestines and what do they do?

The stomach and intestines are part of the *gastrointestinal system*. The *bowel* is the large and small intestines. Food is swallowed and travels down the esophagus to the stomach. Here, food is broken down and mixed before traveling into the intestines. The small intestine further digests particles of food and then absorbs nutrients. The large intestine absorbs water and forms and stores the feces. There are normally large numbers of bacteria in the intestines that aid in digestion and processing of nutrients.

- The *duodenum*, *jejunum*, and *ileum* make up the small intestine
- The *colon* is the large intestine
- The *cecum* is a small pouch at the junction of the small and large intestines that serves little purpose in dogs and cats, similar to the appendix in people
- *Proteins*, *carbohydrates*, *fats*, *water* and *electrolytes* are just some of the compounds that are absorbed via the intestines

What is inflammatory bowel disease (IBD)?

IBD is characterized by inflammation in the bowel. The small intestine is the most commonly affected site, but the colon and stomach can also be affected. When inflammatory cells migrate into the bowel a number of clinical signs and laboratory changes can result. The type of inflammation in the bowel may vary depending on the severity and cause of the IBD. With chronicity, *fibrosis* (scarring) of the bowel can be observed.

- *Inflammation* is an increase in white blood cells in a tissue; examples of white cells include lymphocytes, plasma cells, eosinophils, and/or neutrophils)
- *Eosinophilic* IBD is often associated with parasitic or allergic diseases
- *Lymphoplasmacytic* IBD can be associated with autoimmune reactions, reactions to food or intestinal organisms
- *Protein-losing enteropathy (PLE)* is any intestinal disease that causes protein loss through the intestinal wall into the feces; this can include IBD, but also can result from intestinal cancer and lymphangiectasia
- *Lymphangiectasia* is a dilation of lymph vessels in the intestines that results in severe protein loss; it can be a primary condition or secondary to IBD or other intestinal diseases



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What causes IBD?

IBD can result from a number of potential causes. In many cases, IBD is associated with a food allergy or *hypersensitivity*. Alternatively, the bowel can develop inflammation in response to bacteria or other organisms (even normal ones) in the intestine. Finally, IBD may represent a pure *autoimmune* reaction.

- *Autoimmune* reactions are those in which the body's immune system reacts against itself as it would an invading bacteria or virus

What clinical signs does IBD cause?

IBD causes a number of chronic and progressive clinical signs. Clinical signs are associated with the inflammation in the bowel and the loss of normal function that results.

Common signs include:

- Vomiting
- Diarrhea
- Lethargy
- Weight loss
- Borborygmus
- Hematochezia
- Mucochezia
- Flatulence
- Anorexia

Less common clinical signs include:

- Poor hair coat
- Edema or effusion
- Muscle wasting

- *Bacterial overgrowth* can result when normal intestinal function is lost and can contribute to clinical signs associated with IBD
- *Anorexia* is the complete lack of appetite
- *Hematochezia* and *mucochezia* are the presence of blood and mucous in the stool, respectively; these are seen with large bowel (colon) disease
- *Borborygmus* is the rumbling noise produced by the movement of gas through the intestines
- *Edema* and *effusion* are the accumulations of fluid in the tissues and cavities of the body that may result from low blood protein levels seen with protein-losing enteropathy
- The character and frequency of the diarrhea associated with IBD may vary depending on whether the large or small bowel are affected



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What laboratory changes does IBD cause?

While IBD can cause changes in blood tests, it is a biopsy diagnosis. Depending on the severity and duration of disease, the changes may be mild or extreme. Ultimately, blood tests and biopsies are required to confirm the diagnosis of IBD. This testing can also provide information about prognosis and appropriate treatment plan.

Laboratory changes can include:

- Altered folate levels
- Decreased vitamin B₁₂ levels
- Leukocytosis
- Low protein levels
- Mild anemia

- *Folate* is a B-complex vitamin made by bacteria; levels increase with bacterial overgrowth and may decrease with severe bowel disease
- *B₁₂* is a B-complex vitamin consumed by bacteria and absorbed through the small intestine; levels decrease with severe IBD or bacterial overgrowth
- *Leukocytosis* is an increase in white blood cell numbers
- *Albumin* and *globulin* are the two main proteins lost with severe forms of IBD

What testing is recommended for IBD patients?

There are many goals in evaluating patients with IBD. First, the diagnosis must be confirmed; secondly, other primary conditions that can cause similar signs must be ruled-out; and finally, prognostic and complicating factors must be evaluated.

Patients evaluated for IBD may need the following tests:

- Chemistry profile
- Complete Blood Count (CBC)
- Urinalysis
- Fecal examination
- B₁₂, folate and TLI levels
- Endoscopic biopsy
- Abdominal ultrasound

- *Abdominal ultrasound* is a non-invasive test that uses sound waves to create images of internal organs and structures; this is performed to evaluate for other underlying diseases that may cause signs similar to IBD
- *Endoscopy* is a non-invasive method to examine and attain biopsies of the stomach, small intestine, and colon; depending on the clinical signs, *upper* (stomach and small intestine) and/or *lower* (colon) gastrointestinal endoscopy will be recommended



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What complications can arise in patients with IBD?

Generally speaking, IBD does not cause many complications aside from the predominant clinical signs. The one exception to this is in cases of protein loss. With severe protein loss, animals can develop fluid accumulation in various parts of the body that can cause more severe and life-threatening clinical signs.

In our feline patients, there is concern that severe IBD may transform into lymphocytic intestinal lymphoma in certain cases. This phenomenon is not well understood. While lymphocytic intestinal lymphoma carries a more guarded prognosis than IBD, it is considered treatable in cats.

- *Effusion* in the abdomen (*Ascites*) causes abdominal distension, while effusion in chest (*pleural effusion*) causes respiratory difficulty; in both situations, animals can become severely lethargic and anorexic, and require more aggressive therapy

What treatment options are available for IBD?

IBD is generally very responsive to medical management. The treatment plan will vary depending on the clinical signs, biopsy diagnosis and severity of biopsy changes. Common components of a treatment plan include special diets, immunosuppressive medications, and antibiotics. Vitamin B₁₂ supplementation, probiotics and *Psillium* may also be used. Because IBD is considered a chronic condition, life-long therapy may be required.

- *Antigen-restricted or novel-antigen diets* are diets that include components that an animal has not eaten before; examples of commercially available prescription diets include fish and potato, kangaroo and oat, and duck and pea; when animals are on these diets it is *essential* that they not get any non-approved treats that may mitigate the effects of the diet
- *Antibiotics* act to control secondary bacterial overgrowth and reduce clinical signs of IBD
- *Immunosuppressive* medications include steroids (prednisone, dexamethasone), chlorambucil, azathioprine, and cyclosporine A; these medications suppress the abnormal immune response; they are usually tapered slowly over time
- *Probiotics*, such as yogurt, promote normal intestinal bacterial population growth
- *Psillium* is a natural plant material found in over-the-counter medications, such as Metamucil®, that can help to control large-bowel IBD-associated signs



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• *Sulfasalazine* is an anti-inflammatory medication used in cases of large bowel IBD

What sort of long-term monitoring is recommended for IBD patients?

General recommendations for patients with IBD will depend on the individual case and what medical plan is created. Body weight will be monitored periodically along with careful recording of clinical signs at home. Depending on initial laboratory changes, what medications are used, what form of IBD is present, and how severe it is, CBC and chemistry values may be monitored periodically.

What is the prognosis with IBD?

IBD generally comes with an excellent prognosis. While severe forms of the disease may provide exception, we are usually able to minimize clinical signs and return animals to a normal quality of life.