Diarrhea and vomiting is a common complaint from cat owners. Veterinary technicians must be familiar with IBD and the causes of this disease and work with the entire healthcare team to alleviate the signs and symptoms observed in cats presenting to the hospital.

Inflammatory bowel disease (IBD) refers to a group of chronic, idiopathic gastrointestinal (GI) disorders characterized by histopathologic lesions of mucosal inflammation. IBD today is considered the most common cause of chronic diarrhea and vomiting in dogs and cats. The generic term, IBD, encompasses lymphoplasmacytic enteritis, lymphocytic gastroenterocolitis, eosinophilic gastroenterocolitis, segmental granulomatous enterocolitis (regional enteritis), suppurative enterocolitis and histiocytic colitis. The lymphoplasmacytic form is probably the most common type of IBD. More specifically to felines, the most commonly identified idiopathic inflammatory bowel disorders are lymphoplasmacytic enteritis, benign lymphocytic enteritis, and lymphocytic-plasmacytic colitis. The severity of IBD varies from relatively mild clinical signs to life-threatening protein-losing enteropathies. Inflammatory infiltrates may involve the stomach, small bowel and colon. In cats, the stomach and small bowel are affected most often.

**Patient Assessment**

The most common clinical signs in cats with IBD are chronic vomiting, diarrhea, and weight loss. IBD is most often seen in middle-age to older pets, although it has been seen in pets as young as 4 months. There does not appear to be a breed or gender predilection when talking of IBD. The predominant GI sign varies with the portion or portions of bowel affected. When the stomach and proximal duodenum are affected, vomiting tends to be the predominant clinical sign. Loose, fluid or steatorrheic stools are common when the small intestine is involved. Diarrhea manifested by tenesmus, mucus and small sparse stools is noted with colonic lesions. IBD clinical signs and symptoms are variable. Clinical signs may be intermittent or persistent. Clinical signs tend to increase in frequency and intensity as IBD progresses temporally. The presence of systemic signs is also variable. Some animals present with a history of lethargy, malaise and inappetence, while others are alert and active at the time they are examined. The frequency and character of the vomitus and stools are important to note. At times, vomiting will be related to food intake and the vomitus will contain food particles, while in other cases, animals may vomit only fluid or froth. Veterinary technicians should question owners closely about the appearance of the vomited material. Dark black or 'coffee grounds' type material is indicative of gastric ulceration or erosions. Also, diarrhea may be small or large bowel in origin and
Thus the color of the stools should be assessed to determine the presence of GI bleeding.

When performing a physical examination on cats with IBD, technicians must remember that findings will vary among patients. Some patients will have no abnormalities while other cats will present with weight loss and poor body condition and still others with hemorrhage or hypoproteinemia. Upon palpation of the abdomen, some cats will have thickened loops of bowel.

A thorough history should be taken including: signalment, medication history, vaccination history, deworming schedule, medical history, exposure to toxins, etc. A very thorough nutritional history should also be taken including: feeding regimen, diet fed, type of diet (canned, dry, semi-moist), feeding plan, household member responsible for feeding the cat, treats, toys, medication aids (pilling/medication aids). Another piece of the history should focus on the cat’s environment, what enrichment if any is in the cat’s environment, location and type of litterbox, other pets in the environment, etc.

**Pathophysiology**

The pathophysiology of inflammatory bowel disorders is not fully understood, despite a number of studies by veterinary and medical researchers. The disorder is undoubtedly immune-mediated; however the pathogenesis of the various forms of IBD is poorly defined. Intestinal biopsy specimens from cats with IBD have identified abnormal cytokine mRNA expression. The primary pathway for the development of IBD involves hypersensitivity. However, the underlying cause for hypersensitivity reactions is unknown. Two related theories have been proposed. The first theory speculates that patients suffering from IBD have developed a defect in the intestinal mucosal barrier. This loss of mucosal integrity results in increased gut permeability and hypersensitivity responses to antigens that are normally tolerated. Alternatively, IBD may result from aberrant immunologic responses to luminal antigens. It has been hypothesized that defects in gut-associated lymphatic tissue (GALT) suppressor function may predispose patients to development of hypersensitivity to normally tolerated luminal antigens. Parasites, pathogenic organisms, normal gut flora and dietary antigens may all serve as the trigger for these immunologic reactions. Both potential pathways culminate in release of inflammatory mediators. These substances may then further damage the intestinal mucosal surface and set up a vicious cycle of inflammation and loss of barrier function. It is likely that the pathogenetic pathway is influenced by environmental (i.e., exposure to dietary antigens or GI parasites) and genetic factors that modulate disease expression. The predisposition for IBD in certain canine breeds (e.g., Basenjis, soft-coated wheaten terriers) suggests a potential genetic role. Mucosal inflammatory infiltrates and soluble factors are responsible for the clinical manifestations of IBD. Mucosal inflammation disrupts normal absorptive processes resulting in malabsorption and osmotic diarrhea. Altered gut permeability can result in leakage of fluid, protein and blood into the gut lumen. Malabsorbed fats,
carbohydrates and bile acids result in secretory diarrhea. Inflammatory mediators may also trigger intestinal secretion and mucus production by goblet cells. Mucosal inflammatory infiltrates may alter intestinal and colonic motility patterns, a mechanism attributed to the influence of prostaglandins and leukotrienes on smooth muscle. Inflammation of the stomach and small bowel may stimulate visceral afferent receptors that trigger vomiting. Delayed gastric emptying associated with gastroparesis or ileus may exacerbate vomiting.

**Treatment**
Dietary allergens may play a role in the cause of IBD in felines, so it makes sense that dietary therapy might be beneficial. Dietary therapy should begin upon diagnosis of IBD and in cats with mild IBD, it may be the only therapy necessary to achieve resolution.

**Key Nutritional Factors in Patients with IBD**

**Water**
Dehydration is a common problem in patients suffering from IBD. Reduced water consumption is often aggravated by fluid losses from vomiting and/or diarrhea. Fluid balance should be maintained through oral consumption of fluids. Nevertheless, dehydrated patients and those with persistent vomiting may need parenteral fluid.

**Electrolytes**
Serum electrolyte concentrations should be assessed regularly to allow early detection of abnormalities as vomiting and diarrhea persist. Hypokalemia is particularly common in patients with IBD. Thus, foods containing 0.8 to 1.1% dry matter (DM) potassium are preferred. Potassium levels should be restored with intravenous potassium supplementation. Remember, affected patients often lose large amounts of sodium through diarrhea and, sodium deficits may be masked by dehydration.

**Energy Density and Fat**
Energy dense foods are preferred for managing patients with chronic enteropathies. Such foods allow the provision of smaller volumes of food, which minimizes GI distention and secretions. Unfortunately, energy dense foods are also high in fats. High-fat foods may contribute to osmotic diarrhea and GI protein losses, which complicate IBD. Thus, it is often advantageous to initially provide a food with moderate energy density (4.0 to 4.5 kcal/g DM) and fat levels of 15 to 25% DM). Foods with higher fat levels can be offered as tolerated by the patient. Fiber-enhanced foods typically have lower energy density levels than highly digestible foods because fiber-enhanced foods are usually lower in fat. The DM energy density of fiber enhanced foods for IBD should be at least 3.4 kcal/g for cats. Fat content in fiber-enhanced foods for cats with IBD should be 9 to 18% DM. Normal cats can tolerate much higher concentrations of dietary fat than dogs. Anecdotal information suggests that foods with increased fat content may actually benefit cats with small bowel disease.
Protein
Special attention must be paid to the potential of protein malnutrition in cats with IBD due to fecal losses through diarrhea. High biological value, highly digestible (≥87%) protein sources should be used. Protein should be provided at levels sufficient for the appropriate lifestage for patients not experiencing excessive GI protein loss (35% for adult cats [DM]). Suggested protein levels for patients being managed with hypoallergenic foods" can be lower. Because dietary antigens are suspected to play a role in the pathogenesis of IBD, “hypoallergenic” novel protein elimination foods or foods containing a protein hydrolysate are often recommended. In some cases, elimination foods may be used successfully without pharmacologic intervention. Ideal elimination foods should: 1) avoid protein excess, 2) have high protein digestibility and 3) contain a limited number of novel protein sources to which the cat never been exposed or contain a protein hydrolysate.

Fiber
A number of substrates including beet pulp, soy fiber, inulin and fructooligosaccharides have shown through in vitro fermentation to produce volatile fatty acids that may be beneficial in IBD involving the distal small intestine and colon. These fermentable fibers may serve as prebiotics and cultivate the growth of beneficial bacteria such as *Bifidobacterium* and *Lactobacillus* at the expense. These fibers are usually incorporated at rates of 1 to 5% DM in commercial products. It is prudent to increase dietary fiber content to normalize intestinal motility, water balance and microflora. Fiber has several physiologic characteristics beneficial to managing small bowel diarrhea. Moderate levels (7 to 15% DM) of insoluble fiber add nondigestible bulk, which buffers toxins, holds excess water and, provides intraluminal stimuli to reestablish the coordinated actions of hormones, neurons, smooth muscle, enzyme delivery, digestion and absorption. Fiber can help normalize transit time through the small bowel, to reestablish normal peristaltic action. However, this level of fiber reduces the energy density and digestibility of a food.

Pharmacologic Therapy
It is important that veterinary technicians familiarize themselves with pharmacologic therapies used for treating and managing IBD in cats. Corticosteroids are looked to first when dealing with IBD. Cats with mild to moderate cases of IBD typically respond well to a prednisilone starting dose of 0.5 to 1 mg/lb divided twice a day for two to four weeks. This is followed in 2 week intervals by a gradual decline of 50%. Cats typically respond very well and every other day or every third day doses can often be met in about two to three months. It has been suggested that younger cats with IBD typically do not need to be treated as long as middle age to older IBD cats.

Methylprednisolone acetate can be used as a sole therapy or an adjunct therapy. It is reported that consistent control of signs in cats with moderate to severe
symptoms are harder to control when methylprednisolone acetate is used alone. Veterinary technicians should note that use of methylprednisolone acetate should be reserved for situations where the owner cannot consistently give tablet or liquid preparations orally.

Budesonide is a glucocorticoid that is a newer alternative for IBD management – especially when dealing with severe cases that are refractory to prednisolone, metronidazole, and dietary management or cannot tolerate corticosteroids. Typical dose for cats is 1 mg once per day.

If combination therapy is warranted, metronidazole is the first choice to be used concurrently with prednisolone. Typically for IBD, a dose of 5 to 10 mg/lb BID is recommended.

Summary
It is imperative that veterinary technicians familiarize themselves with IBD and the causes of this disease; and work with the entire healthcare team and patient owner to ease the signs and symptoms observed in cats presenting to the hospital.

Veterinary technicians play an important role in monitoring IBD feline patients and their response to treatment and should be attentive in looking for the following:
1. Corticosteroid – inadequate initial or long term maintenance dose
2. Moderate to severe IBD – failure to use ancillary medications
3. Failure of the healthcare team to recognize and treat a concurrent condition
4. Poor owner compliance
5. Treating only small intestinal inflammation when colitis is present as well
6. Failure to recognize and treat low body cobalamin levels
7. Failure to identify effective nutritional therapy

Suggested Reading
4. Handbook of Small Animal Gastroenterology 2nd Ed. Tams T. 2003, Saunders, St. Louis, MO