

Achieving a Better Understanding of Diarrhea in Cats and Kittens



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Q What typically causes diarrhea in cats and kittens?

A Feline diarrhea can be the result of primary or secondary GI disease and can be acute or chronic (see Table 1).¹⁻⁴ In addition, stress can be either a primary cause of diarrhea or a contributing factor. While acute feline diarrhea is often self-limiting, chronic cases require careful work-up and development of a comprehensive therapeutic plan.

Table 1. Common Causes of Diarrhea in Cats and Kittens¹⁻⁴

DIETARY

- Inappropriate diet/dietary indiscretion
- Food intolerance
- Food allergies (also a cause of inflammatory bowel disease)

INFECTIOUS

- Nematodes - *Ancylostoma tubeaforme* and *Toxocara cati*
- Protozoa - *Giardia* spp., *Cryptosporidium* spp., *Tritrichomonas foetus*
- Bacteria - *Campylobacter* spp., *Clostridium* spp., *Salmonella* spp.
- Viruses - Enteric coronavirus, panleukopenia virus, feline leukemia virus
- Fungi - Regional and rare

FOREIGN BODY/GI OBSTRUCTION

IMMUNE-MEDIATED*

- Inflammatory bowel disease (IBD)

METABOLIC DISEASE/ENDOCRINOPATHY*

- Hepatic diseases
- Hyperthyroidism
- Pancreatitis
- Exocrine pancreatic insufficiency

NEOPLASIA

- Lymphoma (in all cats if FeLV-associated)
- Adenoma/adenocarcinoma*

*Conditions more commonly seen in adult cats than in kittens.

Q Does diarrhea affect kittens and adult cats the same?

A Acute and chronic diarrhea occurs in both kittens and cats. Kittens tend to be more severely affected, whatever the cause. Parasitic infections caused by *Cryptosporidium* and *Giardia* spp. are often involved in more serious small bowel diarrhea cases. Purebred cats with severe large bowel diarrhea are commonly infected with *Tritrichomonas foetus*.

Inappropriate diet can lead to dysbiosis and diarrhea in both adults and young animals but is more likely to cause issues in kittens due to their nutritional requirements for growth and development. I always start with a dietary assessment when evaluating diarrhea in kittens or

cats. Young cats can also suffer from an idiopathic syndrome referred to as juvenile diarrhea. Finally, older cats with neoplasia, inflammatory bowel disease, or metabolic problems like hyperthyroidism will have other physical examination or laboratory abnormalities to aid in directing the diagnostic plan.

Q How are feline and canine diarrhea alike—and different?

A Both species are generally affected by parasites, viruses and bacteria in the same way, although viral and parasitic diseases tend to be species-specific. In my experience, idiopathic juvenile diarrhea is much more common in kittens than puppies. The clinical signs associated with IBD differ between dogs and cats; dogs frequently exhibit diarrhea, while cats more commonly experience vomiting with or without diarrhea. Dogs are more prone to pancreatitis, which can lead to pancreatic exocrine insufficiency and related diarrhea, while cats are more prone to diarrhea from hyperthyroidism. Both species are predisposed to dietary indiscretions and ingestion of foreign objects. Because cats are obligate carnivores, diarrhea due to inappropriate diet is more common.

Q How does your understanding of the microbiome affect your nutritional recommendations for cats with diarrhea?

A The fecal microbiome helps maintain normal gastrointestinal and other physiologic functions including maintaining a healthy immune system. Diarrhea is common in cats and dogs housed in animal shelters due to stress and diet change as well as the presence of parasites and other pathogens. In one of our studies, the percentage of shelter cats with diarrhea lasting two or more days was significantly lower in the group that received a probiotic compared to the control group.⁵

Prescribing antibiotics to cats with diarrhea can have long-term negative effects on the fecal microbiome. Nutritional intervention can be more effective than prescribing antibiotics for many cats with diarrhea. Depending on the cause and type of diarrhea, feeding an appropriate therapeutic diet along with prebiotics and a probiotic can help quickly resolve the diarrhea.

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2 Marks SL. Roadmap to diagnosing and managing the cat with chronic diarrhea. Available at: <https://www.vin.com/apputil/content/defaultadv1.aspx?pld=11372&catId=35300&sid=5709783>. Accessed: May 2020.

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4 Lappin MR, Elston T, Evans L, et al. 2019 AAEP Feline Zoonoses Guidelines. *J Feline Med Surg*. 2019;21(11):1008-1021.

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Helping the Cat with Diarrhea: A Look at Nutrients and GI Health



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There is no “one size fits all” approach to nutritional management of patients with diarrhea. Selecting a therapeutic diet for a cat with diarrhea should be based on the patient’s history, clinical signs and diagnostic work-up, as well as the diet’s nutrient profile.

Dietary fat absorption

One common cause of diarrhea in both dogs and cats is pancreatitis. While some dogs with chronic pancreatitis may require a reduction in dietary fat intake for long-term nutritional management, there currently is no evidence to support this strategy in cats.

Additionally, a study demonstrated that cats with chronic diarrhea may not benefit from low-fat diets. Cats were fed either high-fat (47% of energy) or low-fat (24% of energy), highly digestible diets. More than 75% of the cats showed a positive response, with no significant differences based on dietary fat intake.¹

Protein power

Protein is a critical nutrient in all animals, healthy or not. Adequate

protein and amino acid intake are critical to promoting intestinal healing. Following intestinal injury or inflammation, rapid regeneration of enterocytes helps the intestine to heal quickly, but the continuous turnover of cells exerts a high demand for nutrients. The amino acids glutamine and glutamate are critical to the health of the GI tract, where they provide energy and promote the natural barrier function of the intestinal mucosa.²

Carbohydrate options

Healthy cats are able to digest properly processed carbohydrates at greater than 90% efficiency. However, carbohydrate digestion may decrease in cats with chronic enteropathies. Increased carbohydrate fermentation, indicative of carbohydrate malabsorption, has been noted in cats with inflammatory bowel disease.³ The result can be osmotic diarrhea and dysbiosis.

While a reduction in digestible dietary carbohydrate may be indicated in such cases, cats with diarrhea may still benefit from dietary fiber, which

have very different physiological effects than digestible carbohydrate. Some dietary fibers can be prebiotics—substrates that are selectively utilized by host microorganisms, conferring a health benefit.⁴ Constipated cats may also benefit from a blend of insoluble and soluble fibers in their diet.

Diarrhea is a common condition in cats but there is no single nutritional solution. Careful study of patient history, clinical signs and diagnostics can help veterinarians determine the cause of diarrhea and successfully tailor the nutritional approach.

- 1 Laflamme DP, Xu H, Long GL. Do cats with chronic diarrhea benefit from a low fat diet? *J Vet Int Med* 21:611-612 (Abstr), 2007.
- 2 Li N, DeMarco VG, West CM, Neu J. Glutamine supports recovery from loss of transepithelial resistance and increase of permeability induced by media change in CaCo-2 cells. *J Nutr Biochem* 14:401, 2003.
- 3 Ugarte C, Guilford WG, Markwell P, Lupton E. Carbohydrate malabsorption is a feature of feline inflammatory bowel disease but does not increase clinical gastrointestinal signs. *J Nutr* 134:2068S, 2004.
- 4 Gibson GR, Hutkins R, Sanders ME, et al. Expert consensus document: The International Scientific Association for Probiotics and Prebiotics (ISAPP) consensus statement on the definition and scope of prebiotics. *Nature Rev Gastroenterol Hepatol* 2017;14:491-502.

Bovine colostrum can boost kitten immunity

Diarrhea is a common condition in kittens as they undergo the stresses of weaning, diet transition, rehoming and vaccinations. The GI tract and its protective mucosal layer is home to 70% of the body’s immune cells; however, stressful situations at any age can negatively impact immune function.¹

In a 2009 study, Purina researchers investigated the effect of feeding a diet containing 0.1% spray-dried bovine colostrum (BC) to growing kittens for 36 weeks. Colostrum supplementation, which has been previously demonstrated to have immunological benefits in dogs,² was associated with **increased fecal IgA production, improved specific immune system response** to an innocuous immune challenge (in the form of a rabies vaccine booster), and **greater microbiota stability**. Over the study period, the gut microbiota in BC-fed kittens had 91% similarity to the pre-challenge microbiota compared to 65% similarity in the control kittens.

1. Satyaraj E (2011). *Emerging paradigms in immunonutrition*. *To Companion Anim Med* 26, 25-32.
2. Satyaraj E, Reynolds A, Pelker R et al (2013). *Supplementation of diets with bovine colostrum influences immune function in dogs*. *Br J Nutr*, 1-6.



An Appropriate Diagnostic Protocol Helps Create an Appropriate Feeding Plan



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We frequently encounter patients with diarrhea in my feline-only practice.

Our protocol in these cases includes

1) **performing a thorough physical exam** to assess for clinical signs like abdominal pain and thickening of the bowel loops; 2) **performing appropriate diagnostic tests**; and 3) **performing a nutritional assessment**. Because gastrointestinal (GI) and immune health are linked, diarrhea should be addressed promptly.

Age affects the diagnostic approach

In **kittens**, I tend to see more cases of acute diarrhea vs. chronic diarrhea, with the most common cause being intestinal parasitism. I diagnose these cases by running a fecal analysis by centrifugation—if an appropriate sample can be obtained by the owner. Most of the time, these patients can be treated with an empirical deworming.

With **adult cats**, I may consider empirical deworming; however, a comprehensive physical examination is critical with appropriate diagnostics to follow. Initial diagnostics to consider include a fecal centrifugation, fecal cytology to look for abnormal growth of organisms like *Campylobacter*, and a SNAP *Giardia* test if the patient seems at higher risk of intestinal parasitism. If basic assessments are not rewarding—and especially in older cats with chronic diseases—I may consider the Texas A&M GI panel with TLI, PLI, cobalamin, and folate to assess for pancreatitis, pancreatic insufficiency or IBD. Any cat older than 7 years of age should have a minimum database, so I'd consider a CBC, chemistry panel, and T4, as well as a urinalysis for these older cats, since hyperthyroidism can be a cause of diarrhea as well.

Nutritional assessment is a must

For cats with clinical signs of GI symptoms, a nutritional assessment is critical in determining whether or not the diarrhea could be diet-related and/or something disease-related that



warrants further diagnostics. When I am obtaining the patient's history, I ask owners about the diet they are feeding, if they have recently changed their cat's diet and—for new patients—if the cat has experienced problems with diarrhea before.

In assessing the current diet, it's important to ensure that the diet is complete and balanced for a cat's specific life stage or for cats at all life stages. Look for the Association of American Feed Control Officials (AAFCO) nutritional adequacy statement on the bag or can. For me, the availability of both canned and dry formulations of a diet can be helpful due to varied patient preferences.

Formulate a feeding plan

I often recommend Purina® Pro Plan Veterinary Diets® EN Gastroenteric® Feline Formula for patients with diarrhea. EN has a high total digestibility to promote nutrient absorption. EN dry contains colostrum to help stabilize intestinal microflora, which reduces the risk of stress-related diarrhea and primes the local and systemic immune systems.

Promote immune health

It's critical to consider the immune system of patients when managing their GI health. Along with changing

the diet, I often recommend Purina® Pro Plan® Veterinary Supplements™ FortiFlora® Feline Probiotic Supplement. FortiFlora enhances palatability and contains a probiotic proven to promote normal intestinal microflora. It also promotes a strong immune system.

Key Takeaways

- A thorough physical exam, medical history, diet history and appropriate diagnostic testing are important steps in diagnosing and managing patients with diarrhea.
- Selecting a therapeutic diet for a cat with diarrhea should be based on patient history, clinical signs and a diagnostic work-up.
- In a study conducted by Purina, colostrum supplementation was associated with increased fecal IgA production, improved specific immune system response to an innocuous immune challenge and greater microbiota stability in kittens.

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Colostrum contains antibodies and helps stabilize intestinal microflora



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1. Comparison based on ingredients published in PPVD Product Guide 2020, Hill's Key 2016, Royal Canin Product Guide 2020.
 2. Gore A, Satyaraj E, Labuda J, et al. Bovine colostrum influences feline immune function, Nestlé Purina Research. 2009.



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