

# Veterinary Practice News

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## GI FYI: Managing gastrointestinal issues



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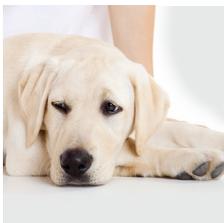
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# GI issues tricky to diagnose, treat

By Kim Campbell Thornton

**F**rom intestinal parasites to irritable bowel disease (IBD), dietary indiscretion to food allergies, gastrointestinal issues are among the most common problems veterinarians see. While they might seem straightforward, they can be difficult to diagnose and treat for a number of reasons.

Chronic diarrhea and vomiting may not be brought to your attention until it has been going on for a while without improving or begins to worsen in severity. And, of course, diarrhea and vomiting can be seen with diseases unrelated to the GI tract. Once the GI tract is pinpointed as the source of the problem, the signs can still have many potential causes. Radiographs show only faint shadows of the intestines, making interpretation difficult.

Gastrointestinal problems can resolve on their own in three to five days, but when they don't, additional diagnostics, therapeutic trials, and medication can be the next step. Fortunately for pets, owners, and veterinarians, more companies are beginning to develop drugs and run clinical trials specifically for cats and dogs with GI disease, says M. Katherine Tolbert, DVM, PhD, DACVIM, clinical associate professor of medicine at Texas A&M University College of Veterinary Medicine & Biomedical Sciences.

"There are a lot of new drugs that can help manage clinical signs associated with GI disease, such as dysrexia and vomiting," she says. "This is relatively new for us in the veterinary profession. In the past, we have had to use drugs developed for humans and hope they work in cats and dogs. As you can imagine, this can be fraught with error, especially since their metabolism of drugs can vary dramatically from humans."

Drug treatments are influenced by a variety of factors, such as severity of disease, whether it is progressive or intermittent, and where in the intestinal tract it is taking place. Potential side effects, patient factors, cost, and veterinarian preference based on experience must be considered as well.

## Steroids

For chronic disease in patients, steroids are often prescribed, ideally after histologic confirmation of disease. However, many veterinarians prefer not to use them until less aggressive therapies have been exhausted. Gastroenterologists are moving toward more conservative doses of steroids in certain cases, particularly in dogs, says Sara Wennogle, DVM, DACVIM, at Colorado State University Veterinary Teaching Hospital.

“I think that’s partially due to the concern for the gut barrier being quite abnormal in many of these cases and the concern for over-immunosuppressing these patients and potentially creating an environment for secondary infections.”

In cases of inflammatory bowel disease and certain types of colitis, an alternative to prednisone is budesonide. The steroid has a high affinity for the steroid receptor and is rapidly metabolized. Dr. Wennogle describes it as a drug that can provide the benefits of a steroid with potentially fewer adverse effects in some patients.

Several immunosuppressive drugs not commonly used for GI disease are being used more readily but it is too early to justify their use globally, says Douglas Palma, DVM, DACVIM (SAIM), staff doctor at Animal Medical Center in New York City. They include chlorambucil, tacrolimus, mycophenolate, and leflunomide.

Steroids have their uses, but use caution when prescribing them. It’s not unusual for patients to arrive at a specialist on multiple immunosuppressive drugs that are creating more catabolic effects than beneficial effects. These catabolic effects can have a profound impact on morbidity and potentially could be associated with thromboembolic complications. That’s not uncommon in dogs with severe protein-losing enteropathies, Dr. Palma says, adding that if chronic high doses of steroids are prescribed and the patient is refractory, maintaining those doses could be doing more harm than good.

“There are certainly times where ‘refractory’ cases receive more and more immunosuppressive drugs rather than considering other



More companies are developing drugs and running clinical trials specifically for cats and dogs with GI disease.

variables that may be having a synergistic effect, including the microbiome and dietary factors,” he says. “It’s a complicated issue and every patient is slightly different. Oftentimes, manipulation of diet may be the primary change that results in dramatic clinical improvement. In other words, all factors may work in concert with one another in a unique way within a given patient to achieve success. The role for each aspect and its contribution to disease cannot be emphasized enough.”

## Antibiotic usage

Clients may request a course of antibiotics to treat a pet’s diarrhea or other gastrointestinal signs, but use of antimicrobials is not risk-free. Sometimes infectious GI conditions respond to antibiotics, but they are best reserved for cases in which the patient has compatible clinical signs and, ideally, positive results from culture and sensitivity testing

for the infectious organism. Antibiotics can cause side effects, such as vomiting, diarrhea, and inappetence, worsening or prolonging intestinal upset. It can be better to withhold them unless they are specifically indicated.

Even when antibiotics work, it's not always clear why.

"Metronidazole is commonly administered to dogs with acute diarrhea, and many cases respond," says Michael Stone, DVM, DACVIM, at Tufts University's Cummings Veterinary Medical Center in North Grafton, Mass. "Why this antibiotic works is a little bit of a mystery. The antibiotic is not killing all the bacteria in the intestine, but instead altering the types of bacteria back to a healthy mix. At least that's our current theory."

In an example of antibiotic usage gone wrong, Dr. Stone notes use of antibiotics in research studies for patients with salmonellosis. Instead of speeding resolution of disease, antibiotic use prolonged the period that patients shed salmonella bacteria in the stool.

"Given this phenomenon, we only treat patients that have salmonellosis with antibiotics if the bacteria have migrated from the intestine into the blood," Stone says. "Otherwise we allow the infection to run its course, with resolution of illness within three to seven days."

While antibiotics have their place, they are generally not a good long-term solution for most dogs, Wennogle says. Extensive antibiotic use can lead to resistance, causing dogs to experience relapses after first being initially responsive to the drugs.

### Shift in focus

One of the changes in treatment for gastrointestinal problems is a move toward addressing bacterial populations in the gut. Currently, there isn't yet a lot of strong science supporting prebiotics, probiotics, or symbiotics, but the premise for using them is strong, Palma says. Some data that has been presented shows promise in certain models and disease states, he says.

"A relatively recent publication looking at a human probiotic called VSL #3 showed, in an IBD model in dogs, improvements when compared to traditional therapy with prednisone and metronidazole. There is a slight benefit in patients that receive the medication versus standard therapy, which is kind of unheard of. While studies are oftentimes underpowered and may not be repeatable, this is a well-designed study that certainly suggests further investigation."

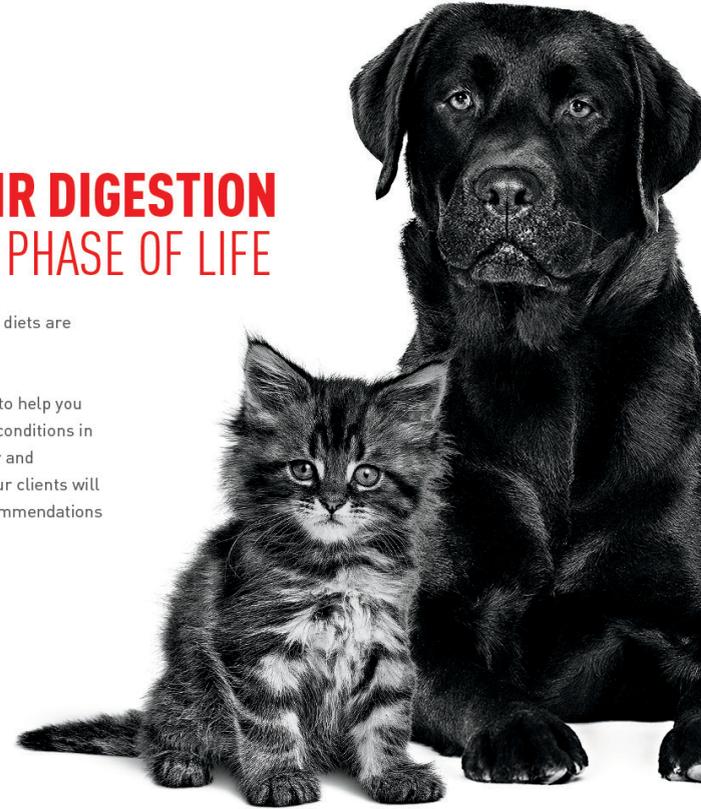
Symptomatic therapies, such as clay- or resin-based absorbent compounds, are becoming more commonplace in management of patients with diarrhea. In addition, some drugs are in development with the goal of blocking common mechanisms in secretory diarrhea.



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Clients may request a course of antibiotics to treat a pet's diarrhea or other gastrointestinal signs, but use of antimicrobials is not risk-free.



Although they are not a medication per se, fecal microbiome transfers (FMTs) also show promise. They have the potential to normalize microbiota and levels of secondary bile acids, and replenish bacterial species in the gut.

The effect can depend on the underlying disease, according to Texas A&M University College of Veterinary Medicine associate professor Jan Suchodolski, DrMedVet, DACVM (immunology), who spoke on the microbiome at VMX in 2018. If the initial trigger is gone, there can be lasting improvement of microbiota, but dogs with chronic enteropathies may need repeated FMTs.

### Food is medicine, too

There is renewed interest in the importance of diet in treating gastrointestinal upset. While diet is not considered medication, it is a mainstay of therapy for gastrointestinal problems. Changing a patient's diet can be helpful in treating underlying disease.

"Diet and medications are not necessarily mutually exclusive," Wennogle says. "Manipulation of the diet has a lot of value in treating underlying diseases and potentially sparing the use of more medications."

Conversely, a patient's diet may be a potential cause of illness. Dietary constituents may contribute to gut inflammation, for instance. A consultation with a veterinary nutritionist can be a form of "medication" to suggest for patients with chronic problems, Stone says.



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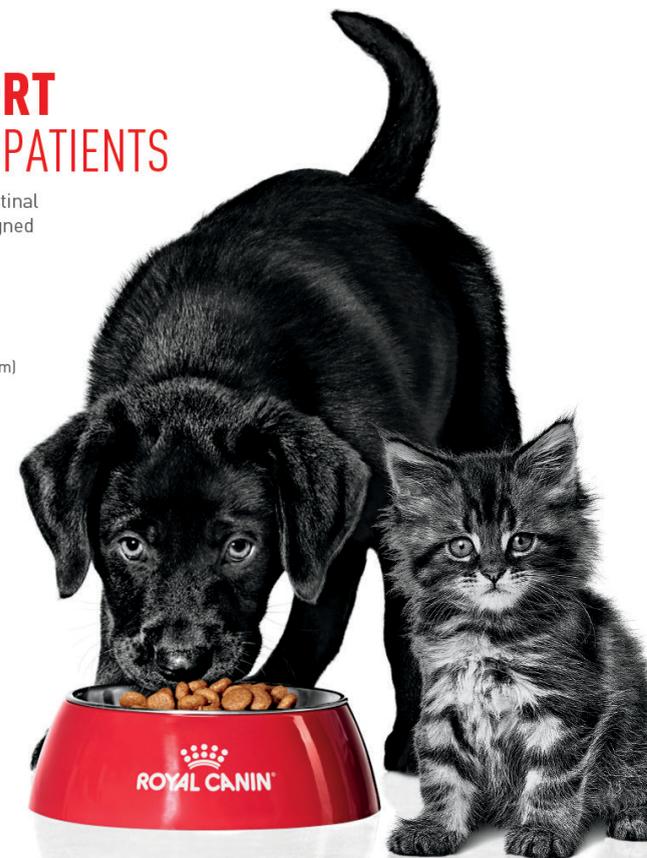
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## Pain relief

Anyone who has suffered stomach upset knows gastrointestinal problems can be painful. Treating that pain is another aspect of managing GI problems in pets. A few classes of pain medication are available for veterinary use, and the choice of which to use varies depending on the condition.

Appetite stimulants can be a supportive therapy for patients that have nutritional deficiencies because they are reluctant to eat. Antiemetics (maropitant citrate) can help vomiting patients, and may alleviate visceral pain to some extent, Wennogle says. When it's not cost-prohibitive, such as in smaller dogs and cats, buprenorphine may help with patients with spasmodic or visceral pain.

"Because many of these animals end up perhaps being treated with steroids, we don't necessarily want to encounter a situation where we have to get them off a nonsteroidal anti-inflammatory drug and then wait a while to start a steroid," she says. "We tend to lean more on the opioid-type medication and maybe trying [a maropitant citrate] for pain. I think another drug to consider would be gabapentin."

Gastroprotectant drugs that may seem appropriate don't always have a place in treatment of GI disease.

"Much like in human medicine, there is a huge problem with the overuse of gastroprotectant drugs, such as famotidine or omeprazole in dogs and cats with GI signs," Tolbert says. "Many veterinarians use these drugs for the adjunctive treatment of chronic kidney disease (CKD), pancreatitis, and vomiting. The use of these drugs for those conditions is inappropriate because CKD and pancreatitis are not causes of GI ulceration. When vomiting or dysrexia is a concern, veterinarians should reach for antiemetics and appetite stimulants, respectively, rather than gastroprotectants."

## Client communication

Clients may expect medication to provide a quick resolution to their pet's problem, but that's not always possible. Tolbert spends a good part



There is renewed interest in the importance of diet in treating gastrointestinal upset. While diet is not considered medication, it is a mainstay of therapy for gastrointestinal problems.

of the first appointment educating clients about the possible extent of diagnostics, along with first-, second-, and third-tier options. Not every patient needs a \$2,000-plus workup, but in some cases, a number of conditions must be excluded before arriving at a diagnosis.

"Clients often want quick and inexpensive options," she says. "This is often not possible with the diagnosis and treatment of GI diseases, especially those that are chronic."

Successfully managing a complicated or refractory chronic enteropathy requires great attention to detail and manipulation of variables, including medications and dietary factors over time. It may take months of constant tweaking of the diet and/or a combination of medications.

"It's critical our clients who want a quick or easy fix know that it's not there yet," Palma says. "As we learn more and more about the molecular mechanisms of things, there will no doubt be lots of different and potential avenues for treatment. It's hoped we will gain more understanding about gastrointestinal disease over time, but we're still learning those things." ●



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# Current and emerging approaches to **managing acute pancreatitis**

By Kim Campbell Thornton

**F**asting a dog or cat used to be step one in treating acute pancreatitis, but that's no longer the case. It was thought feeding would stimulate pancreatic activity in an already inflamed organ, but increasingly, early intervention with nutritional support is seen as critical in cats and important in dogs.

“Nutritional intervention has become much more aggressive,” says Craig Webb, PhD, DVM, DACVIM, professor of small animal medicine service at Colorado State University, College of Veterinary Medicine and Biomedical Sciences. “We are certainly getting nutrition into these guys earlier, and it seems to decrease the number of days in the hospital and cost and leaves [the pet] with a healthier gastrointestinal (GI) tract.”

Interestingly, for something as common as acute pancreatitis in pets, there's a surprising lack of data on management, at least from a nutritional perspective. But although the mechanisms for pancreatitis in people and in dogs tend to be quite different, studies from human medicine suggest the pancreas does not become more stimulated if food goes by it. As such, the best way to feed patients with acute pancreatitis is orally. When that's not possible because they don't feel like eating or they're vomiting, a variety of feeding tubes are available to provide nutrition enterally or parenterally.

### Feeding tube factors

Based on results in human medicine—where nutritional management is an important part of treating patients with acute pancreatitis—as well as preliminary studies in dogs and cats, early enteral nutrition tends to be favored over parenteral nutrition. While limited data are available in veterinary literature, evidence tends to support the beneficial role of enteral nutrition, according to a study published in the April 2014 *Journal of Veterinary Emergency and Critical Care*.

There are a couple of reasons for that. One is that enteral nutrition does a better job of promoting gut health.

In her explanation, Cailin R. Heinze, VMD, DACVN, assistant professor of nutrition at Cummings School of Veterinary Medicine at Tufts University, cites the adage, “If the gut works, use it.”

In theory, parenteral nutrition can meet nutritional needs calorie-wise and in terms of providing adequate protein, but it doesn't promote gut health because enterocytes are dependent on the nutrients in the lumen.

Any bit of food enterally is going to be healthier for the gut typically than meeting all energy needs parenterally,” she says. “Even if you have to feed most calories parenterally, give some enterally.”

Studies show enteral nutrition is a more effective way to deal with the health of the gastrointestinal tract because the GI mucosa benefits directly from short-chain fatty acids produced by nutrition going through the gastrointestinal tract.



There is a long list of potential causes of pancreatitis, but none are well established. In dogs, it's sometimes thought a high-fat meal or other dietary indiscretion may be the trigger.

## New pancreatitis drug in Japan

A Japanese company released its first animal health product, Brenda, in September 2018. The drug, fuzapladib sodium hydrate, was approved by the Japanese Ministry of Agriculture, Forestry, and Fisheries to help reduce clinical signs associated with acute pancreatitis in dogs.

Ishihara Sangyo Kaisha (ISK) is seeking approval for the drug from the U. S. Food and Drug Administration. ●

“If you bypass the GI tract with parenteral nutrition, that’s a reasonably important piece of the nutritional benefit you’re then missing,” Dr. Webb says.

Providing parenteral nutrition is also difficult logistically. Many formulations require a central line because of high osmolarity. Patients need 24-hour monitoring, and there’s greater risk of metabolic complications, such as hyperlipidemia or hyperglycemia, which are seen less commonly with enteral nutrition. Patients receiving parenteral nutrition may also have a higher rate of infection. All of that can result in a significant cost increase to the client.

Metabolic changes secondary to parenteral nutrition can also affect levels of electrolytes. Those changes are less likely in enteral nutrition.

The additional advantage of an enteral feeding tube is that clients can continue feeding the pet at home through it. Both dogs and cats usually tolerate feeding tubes well, with minimal complications or hindrances to their lifestyle. The only difference may be that owners must give multiple small meals daily to prevent the pet’s stomach from ballooning with too much food, as well as to ensure normal motility. Besides nutrition, feeding tubes make it easy for owners to give medication or fluids, if needed.

“That is often a quick way to get the animal out of the hospital, which saves them tremendous amounts of money and gets the animal back into their home environment where it’s more comfortable,” Webb says.

Both procedures are useful, and in skilled hands, both are effective, Webb says, but the extra skill, effort, and attention required to pull off parenteral nutrition correctly give enteral nutrition the edge.

### Critical care patients

Part of addressing acute pancreatitis is impressing upon the client the seriousness of the condition. Patients often need 24-hour monitoring in a critical-care unit with fluid support to keep the pancreas perfused and “wash out” the inflammatory cytokines.

“I need the patient getting aggressive and appropriate care at a very well-equipped facility,” Webb says. “And that’s going to cost some money and take some commitment, but it just doesn’t make sense to try to deal with this any other way.”

With patients who have severe clinical signs, it may be necessary to find other ways to feed their gastrointestinal tract. Techniques include post-pyloric feeding with nasojejunal or gastric jejunal feeding tubes.

## Treatment outlook

Little research has been done on pancreatitis in dogs and cats, but researchers in human medicine are investigating the potential of immunonutrition as a way to modulate pancreatic inflammation and improve gut barrier function for humans with acute pancreatitis.

The concept of immunonutrition—which is the use of specific nutrients to modify inflammatory or immune responses—has three potential targets: mucosal barrier function, cellular defense, and local or systemic inflammation. Nutrients being looked at on the human side include arginine, glutamine, branched-chain amino acids, and n-3 fatty acids.

It’s unknown at present which nutrients might be beneficial for pets, but Craig Webb, PhD, DVM, DACVIM, professor of small animal medicine service at Colorado State University, College of Veterinary Medicine and Biosciences, says possibilities might include prebiotics that are metabolized into short-chain fatty acids. These are a healthy nutrient source for the gastrointestinal tract, as is fiber, which he describes as a fascinating component of diets that is just beginning to be understood.

“And we’re just starting to touch on the huge importance of the microbiome in a wide variety of diseases including pancreatitis and the gastrointestinal involvement in that condition,” Dr. Webb says.

Whether this type of treatment filters down to pets remains to be seen. “Many of the most advanced human therapies these days often involve immunomodulation or are very specifically tailored toward specific patients. Both of those concepts are big in human medicine now and both are very, very expensive,” Webb says. “Often these treatments are cost-prohibitive in veterinary medicine, but we take what we can from human research and adapt it in ways that much of it is still potentially useful and cost-effective in our veterinary patients as well.” ●

“That’s something we’ve been doing more in our hospital—we have some severe cases that are really intolerant to enteral feeding and feeding into their stomach or esophagus because they continue to have gastrointestinal signs, such as vomiting,” says Martha G. Cline, DVM, DACVN, who practices in the clinical nutrition department at Red Bank Veterinary Hospital in Tinton Falls, N.J. “Sometimes, too, we’ll look at doing things like partial parenteral nutrition, where we have part of the calories provided enterally with additional calories through a peripheral or a central catheter.”

### Dogs versus cats

While it may be more recognized in cats, acute pancreatitis affects both dogs and cats, possibly with greater frequency in both species than is generally known. And each species presents differently.

Cats tend to become anorexic and lethargic and may be either febrile or hypothermic. Dogs typically become anorexic, start vomiting, and exhibit cranial abdominal pain. Abdominal pain appears to be almost nonexistent in cats, but Webb says that may be because it’s more difficult to identify abdominal discomfort in cats than it is in dogs.

Treatment varies as well. Dogs with acute pancreatitis are typically fed a highly digestible diet that’s low in fat, Dr. Cline says. Fat content is less important when it comes to cats, but they still need a food that’s highly digestible.

“I think it’s important to emphasize that cats are very different than dogs,” Dr. Heinze says. “If we have a cat with pancreatitis in the hospital, often the presenting complaint initially was with anorexia. In those animals, I’m focused more on just providing appropriate calories and appropriate nutrient levels, and I tend not to worry as much about the fat content of the diet.”

Dogs are more likely to present only with pancreatitis. Cats, on the other hand, may present with triaditis: cholangiohepatitis, inflammatory bowel disease, and pancreatitis. “Approaching a cat with triaditis may also involve dietary management of their inflammatory



bowel disease, which may include a novel or hydrolyzed protein diet, which tends to also be highly digestible,” Cline says.

Which pets get pancreatitis, and why, is unclear at this time. There’s no specific breed predisposition for it. The exception is miniature schnauzers, who have familial predispositions toward hyperlipidemia, which can lead to pancreatitis.

There is a long list of potential causes of pancreatitis, but none are well established. In cats, possibilities include infectious causes and toxoplasmosis. In dogs, it’s sometimes thought a high-fat meal or other dietary indiscretion may be the trigger. Steroids were once thought to cause pancreatitis, but that belief is going by the wayside, with steroids now being considered as a potential treatment—at least for chronic pancreatitis.

“That’s a million-dollar question for which we do not know the answer,” Webb says. ●

Part of addressing acute pancreatitis is impressing upon the client the seriousness of the condition. Patients often need 24-hour monitoring in a critical-care unit with fluid support to keep the pancreas perfused and “wash out” the inflammatory cytokines.



# Before you change **THE DIET...**

By Sarah K. Abood, DVM, PhD

**N**ughty Girl is a healthy six-month old terrier puppy who is being fed a complete and balanced commercial growth food. She lives with Bad Boy, a four-year old beagle-spaniel cross who is fed an adult maintenance dog food.

Bad Boy is brought to your clinic for a two-day history of vomiting and acting sluggish (or punky). Your physical exam reveals some pain on abdominal palpation and a lab test for canine pancreas-specific lipase is “abnormal,” suggesting an elevated lipase level. Your suspicion of pancreatitis is high and, after rehydrating the dog with fluids, you send him home on a fat-restricted therapeutic diet.

## Is a diet change warranted in this situation?

Nutrition textbooks and veterinary nutritionists refer to dietary fat as a “nutrient of concern” or “key nutritional factor” when talking about nutritional management for patients with pancreatitis. However, before automatically switching a patient’s diet, conduct a thorough nutritional assessment to get the whole picture of what’s happening in the home environment.

Performing a nutritional assessment involves collecting information about the patient, the diet, and feeding management (Baldwin, et. al. 2010). This is not a process that involves extra time or work—a nutritional assessment begins with routine information collected about the type of food going into the animal’s bowl at mealtime, the source of water, the number and types of treats, as well as supplements and medications given on a daily or weekly basis. A member of your health-care team can get these details in the exam room or by having the owner complete a diet history form in the reception area. A third approach would be to have clients complete an online diet history form (available on your website) prior to arriving for their scheduled appointment.

The nutritional assessment continues when you perform a thorough physical exam and record the animal’s body weight, muscle condition, and body condition score in the medical chart. Questions about feeding management and the home environment (such as when and where the animal is fed, other animals in the home, number of food and water bowls, number of litter boxes, etc.) provide useful pieces of information that may shed light on some aspect of the animal’s medical condition or are equally important for short- or long-term recommendations.

In the case of Bad Boy, a nutritional assessment would include a few key questions about when, where, and how often both dogs are fed (together or separate? multiple meals each day or food available at all times?). Questioning the owner(s) would reveal that when Naughty Girl doesn’t finish all her food, Bad Boy gets to her bowl and gobbles up whatever is left. Comparing the fat and protein content of the puppy product to the adult maintenance diet (based on grams per



100 calories rather than percentages) would reveal the puppy food is higher in fat and protein, suggesting a possible etiology for pancreatitis. The adult dog food is appropriate from the standpoint it meets the nutritional requirements for Bad Boy, and so it doesn’t actually need to be changed. However, the feeding management in the home requires some adjustment to prevent Bad Boy from eating the higher-fat, higher-protein puppy food. The purpose of taking a thorough diet history is that you may learn the food in the bowl is not the problem, which means an immediate change in food type may not be indicated.

Gastrointestinal (GI) diseases are complicated because organ functions are complicated. Across North America, the commercial foods fed to dogs and cats are equally complex—more than 30 nutrients

In addition to collecting details about what’s happening in the home environment, a nutritional assessment includes performing a thorough physical exam and recording the animal’s body weight, muscle condition, and body condition score in the medical chart.

are needed to make a complete and balanced pet food, and each product can have a dozen or more ingredients to meet the required nutrients. Nutritional management of GI diseases requires thinking about the nutrients of concern for an animal (Table 1) and sometimes the ingredients, too. Integrated functions of the liver, gallbladder, pancreas, and small and large intestines need to be understood in terms of how different nutrients (proteins, fat, complex carbohydrates, minerals, and vitamins) are digested, absorbed, metabolized, stored, and excreted from the body.

Few controlled prospective clinical studies are available to consider as evidence for nutritional management of GI diseases; of those published, the focus has been on the role of dietary protein, fat, or fiber. A recent review summarized the potential benefits of nutrient modifications for some enteropathies (Rudinsky, et. al. 2018). The authors concluded more than one dietary trial may be warranted in dogs or cats who fail to respond the first time a food is changed.

### A little bit of math goes a long way

Before deciding to change a patient from one diet to another, you should understand how many calories (and how much protein and fat) are being consumed from the current diet. Equally important, you also should understand how those same nutrient intakes will change when the animal's food is switched. This process begins by calculating the patient's resting energy requirement (RER) using the following equation:  $70 \times (\text{Body Weight}_{\text{kg}})^{0.75} = \text{calories per day}$ . Next, estimate daily energy requirement (DER) by multiplying the RER value by a "fudge factor" ranging between 1.1 and 1.6 (Hand, Thatcher, Remillard, Roudebush, 2010). For healthy animals in good body condition, a conservative value of 1.2 is a reasonable place to start. To estimate the patient's minimum dietary protein needs, use the following rules of thumb: 2.2 g per kilogram body weight per day for dogs, and 4.5 to 5 g per kilogram body weight per day for cats (Laflamme and Hannah, 2013). Once you have calculated these values, compare the number of

**Table 1: Nutrients of concern for different GI conditions**

GI Condition or Disease	Nutrients of Concern
Chronic colitis	Fiber
Diabetes	Carbohydrate, fiber, protein, fat
Exocrine pancreatic insufficiency	Fat, fiber
Food intolerance	Fat, protein, carbohydrate
Hypersensitivity/Food allergy	Protein (possibly fat, carbohydrate)
Gastritis	Fat, protein, fiber, K, Na, Cl
Hepatitis	Protein, fat, sodium, copper, zinc, iron
Hepatic lipidosis	Fat, protein, potassium, arginine, taurine, carnitine
Pancreatitis	Fat
Protein-losing enteropathy	Protein
Portal systemic shunt	Protein
Short bowel syndrome	Protein, fat, B-12
Small intestinal bacterial overgrowth	Fiber

\* Information for this table was compiled from *Small Animal Clinical Nutrition*, 5th edition, *Applied Veterinary Clinical Nutrition*, and *Canine and Feline Nutrition*, 3rd edition.

calories and protein consumed in the current diet with what would be consumed from the new diet.

When using veterinary therapeutic diets, specific information about the grams of protein or fat per 100 calories can be found in the published product guides or online at the manufacturer's website.

For over-the-counter dog and cat foods, an easy three-step process is available to estimate the protein or fat concentration on a calorie basis (Shmalberg, 2013). The two pieces of information needed from the pet food label or the company website are the percent crude protein or crude fat, and the Kcals per kg.

Anytime you're considering a diet change, you or someone on your health-care team should coach the owner(s) on how to transition their pet to the new diet. To maximize acceptance and minimize GI upset, a gradual transition over 10 days should be followed. On day one to three, the pet should be fed 25 percent of a new food with 75 percent of the current food. On day four to six, feed 50 percent new and 50 percent current food. On day seven to 10, feed 75 percent new and 25 percent current food. After day 10, the pet should have transitioned completely to the new diet. Offering the new and current foods side-by-side in separate bowls will allow the pet to make a choice and may improve the acceptance rate.

Monitoring during the transition period (and afterward) is an important step in determining whether a diet switch is successful or not. Daily or weekly record-keeping at home can be done by owners using a computer spreadsheet or paper and pen, and can include appetite, energy or activity level, fecal score (a "poop diary"), and an "itchy-scratchy diary." Weekly or monthly monitoring at your clinic might include body weight and body condition score checks. The process of monitoring can help foster a sense of teamwork with your client, keeping them engaged and you informed of the animal's progress on a new diet. ●

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Anytime you're considering a diet change, you or someone on your health-care team should coach the owner(s) on how to transition their pet to the new diet.

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