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BEST OF SERIES



NUTRITION Essentials

NOT EVERY GI PATIENT CAN BE FED THE SAME

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RECOMMENDED FOR:

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- Convalescence
- Gastritis
- Enteritis
- Colitis
- Intestinal parasites
- Inflammatory bowel disease / chronic enteropathy

OR

LOW FAT

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RECOMMENDED FOR:

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- Enteritis
- Colitis
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- Lymphangiectasia
- Inflammatory bowel disease / chronic enteropathy
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- Protein-losing enteropathy

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LOW FAT



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- **High digestibility** to ensure optimal nutrient absorption



See how each formula benefits your patients. 

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Cover photo ID 44563819 © Photodeti | Dreamstime.com



A FORUM MEDIA GROUP COMPANY

Published by
Kenilworth Media Inc.

266 Elmwood Ave. #289, Buffalo, NY 14222, (866) 572-5633
www.veterinarypracticenews.com

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Nutrition Essentials



Part One

Meeting the CKD nutrition challenge

By Kim Campbell Thornton

Meeting the CKD nutrition challenge

How dietary management can slow CKD and improve quality of life



Chronic kidney disease is seen in 28 to 31 percent of geriatric cats and 7 percent of dogs. While there's no cure, many studies show dietary management with a therapeutic renal diet containing high-quality protein and reduced phosphorus can help to slow progression and give pets with CKD better quality of life by decreasing the body's production of waste products and maintaining normal blood pressure.

"Data is available to show that nutritional intervention can improve both patient morbidity and mortality in dogs and cats with CKD," said Martha Cline, DVM, DACVN, at Red Bank Veterinary Hospital in New Jersey.

But pets, cats in particular, don't always buy into that, and managing them can be frustrating for veterinarians and owners alike. Here's what to know about their nutritional needs and ways to meet the challenge of getting them to eat an appropriate diet.

Hospital in Mercer Island, Wash., starts by looking at the cat. Is the weight ideal? Is weight increasing or decreasing? What is the cat's body condition score, muscle condition score, hydration level, and coat quality? Does the cat appear to have pain in joints, the oral cavity or elsewhere in the body? What is the cat's mental acuity?

Next, Dr. Marshall looks at blood parameters to see if chemistries and electrolytes are in balance and if anemia is present or the cat is dealing with concurrent hyperthyroidism. Urinalysis and blood pressure evaluation are other important factors in a complete renal workup. With this information in hand, he decides whether the cat is doing well on the current diet or if he should recommend a new diet.

Assessing a pet's nutritional status

A nutritional assessment checklist for pets with CKD includes body weight, body condition score, muscle condition score, and any clinical signs associated with CKD that might affect diet choices.

Gary Marshall, DVM, of Island Cats Veterinary



"A nutritional assessment checklist for pets with CKD includes body weight, body condition score, muscle condition score, and any clinical signs associated with CKD that might affect diet choices."

Diet choices

Therapeutic renal diets and home-prepared diets are options for feeding pets with CKD. Therapeutic diets can improve patient morbidity and mortality, but some animals may not find them palatable due to changes in appetite occurring with CKD, Dr. Cline said.

For pets who will eat it, a commercial TRD is preferable because it is nutritionally balanced, said Sarah Caney, BVSc, Ph.D., DSAM, of Vet Professionals Ltd. in the U.K. and author of *Caring for a Cat with Chronic Kidney Disease*. "The ideal diet is a wet formulation, if possible, to support maintenance of normal hydration," she said.

While most papers indicate that azotemic patients in IRIS stages 2, 3, and 4 benefit most from a TRD, recent papers suggest that cats in IRIS stage 1 may also benefit from eating a phosphate-restricted food, Dr. Caney said.

In a 2002 randomized double-blinded clinical study of 38 dogs with stage 3 or stage 4 CKD, the

group fed the TRD demonstrated improved quality and increased quantity of life. Dogs fed the renal diet survived at least 13 months longer than dogs in the control group.

When pets turn up their noses at TRDs, home-prepared diets formulated by a veterinary nutritionist or individual with similar training may be considered. They can be tailored to an individual patient's needs and tend to be more palatable. A home-prepared diet can be helpful with patients in later stages of CKD who experience loss of appetite.

"In clinical practice, I have found appropriately formulated home-prepared diets for CKD useful in improving caloric intake," Dr. Cline said.

When Marshall has clients who ask about giving their CKD cat a home-prepared diet, he refers them to the UC Davis Nutritional Support Service (nutrition.vetmed.ucdavis), but he prefers TRDs.

"Recently, we have been seeing more and more focus on palatability from the major brands, so there is a wider choice for our sick patients," he said.

Animals who won't eat TRDs or home-prepared diets or are losing weight can do well with feeding tubes, usually on a short-term basis. They not only deliver appropriate nutrition to achieve caloric goals, but also enable owners to administer medication without pilling a pet. Commercially available liquid TRDs pass easily down even narrow feeding tubes. Commercially available wraps make feeding tube maintenance easier, as well.

The main hurdle, Dr. Marshall said, may be persuading owners that the short anesthetic procedure to implant a feeding tube will have a net benefit for a sick companion. Potential complications, which should be discussed beforehand with clients, include managing infections or cellulitis.



Staging CKD in cats and dogs



IRIS staging can be a good starting point, but some veterinarians believe it's more useful to review exam findings and patient symptoms in combination with trends in lab values. "It is extremely difficult to accurately stage feline patients with only one set of data at one point in time," said Gary Marshall, DVM, of Island Cats Veterinary Hospital in Mercer Island, Wash.

Guidelines for staging chronic kidney disease, including algorithms, are available from the International Renal Interest Society at iris-kidney.com. The international organization was created in 1998 to help veterinarians improve understanding, diagnosis, and treatment of renal disease in cats and dogs.

"The patient is staged according to fasted blood creatinine levels in a nondehydrated patient," said Sarah Caney, BVSc, Ph.D., DSAM, of Vet Professionals Ltd. in the U.K. and author of *Caring for a Cat with Chronic Kidney Disease*. "Ideally, the test is repeated on at least two occasions so that an accurate assessment can be performed in the stable patient. Patients can then be sub-staged according to their blood pressure and proteinuria-UPC-measurements."

IRIS staging can be a good starting point, but Gary Marshall, DVM, of Island Cats Veterinary Hospital in Mercer Island, Wash., finds it more useful to look at exam findings and patient symptoms in combination with trends in lab values.

"I have many patients who appear very sick with a creatinine of 2.8, and some who are quite stable and in good clinical shape with a creatinine of 4.8," he said. "I think if the current popular staging protocol included muscle condition and trend in core lab data, it might be more helpful in assessing the patient in a holistic fashion. It is extremely difficult to accurately stage feline patients with only one set of data at one point in time."

A complementary diagnostic in cats and dogs is SDMA concentrations in blood plasma or serum, which may be a more sensitive biomarker of renal function. The IDEXX SDMA assay, introduced in 2015, can help to identify CKD an average of 17 months sooner in cats, according to a study published in 2014 in the *Journal of Veterinary Internal Medicine*. Increased levels of SDMA in the blood are noticeable when only 40 percent of kidney function has been lost, as opposed to higher levels of BUN and creatinine, which may not become evident until 75 percent of kidney function is gone.

"SDMA levels are not influenced by muscle mass, and therefore levels can be more reliable in indicating the severity of renal disease in poorly muscled patients," Dr. Caney said. "For example, if the patient has poor muscle mass and an SDMA of 25 or higher (SDMA ≥ 25 $\mu\text{g/dl}$), it is suggested they are treated as IRIS Stage 3, even if their creatinine levels are in the Stage 2 range."

An SDMA test alone is not sufficient to diagnose or stage CKD. The test does not detect proteinuria, hypertension, and anemia, all factors affecting progression and survival. And dehydrated pets may have artificial elevations of SDMA.

"It is important for clinicians to remember the guidelines call for this test to be persistently elevated or in conjunction with additional clinical findings for the diagnosis of early CKD," said Martha Cline, DVM, DACVN, at Red Bank Veterinary Hospital in New Jersey. ●

Key nutrients

Levels of phosphorus, protein, sodium, potassium, and fatty acids are all components to consider when selecting a renal diet for a pet. Based on current available evidence, some are more important than others, and they aren't necessarily the ones thought to be of concern.

Phosphorus: When it comes to managing CKD, phosphorus is a key nutrient. Phosphorus retention, causing elevated serum phosphorus, is common in advanced CKD. Even within normal range, higher serum phosphorus increases risk

of further renal damage, said Dottie Laflamme, DVM, Ph.D., DACVN, in her 2018 VMX lecture “Dietary Management in Feline CKD.”

Although evidence supports a benefit to controlling phosphorus levels in cats with CKD, no studies have been performed to identify an optimum concentration of dietary phosphorus for cats with CKD, she said. The current recommendation is to tailor phosphate restriction or phosphate binders to individual patients to achieve a serum phosphorus concentration in the low normal range.

How infected ticks affect canine CKD

Why annual screening for exposure is vital

By **Melissa Beall, DVM, Ph.D.**

A single tick can transmit multiple infectious agents that may cause or contribute to serious illness—including kidney disease. And because dogs don't always show clinical signs, it can be challenging to understand the true harm of any given infection to a pet's health. This makes regularly screening pets—including asymptomatic or seemingly healthy ones—to identify exposure to infected ticks all the more important.

All dogs need to be screened annually for exposure to infected ticks

It's quite possible a patient could be fighting an infection without showing any signs of disease. That is why limiting screening to symptomatic pets and those known to have had a tick on them is too restrictive—it will miss infections. All dogs need to be tested, and pet owners need to be reminded that negative results are the goal in order to verify preventive measures against ticks are working.

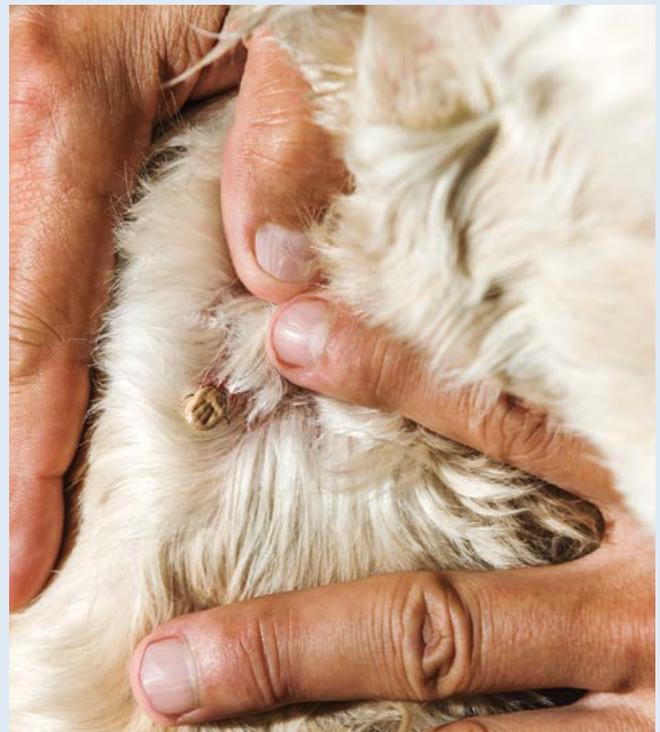
A new study reinforces the importance of detecting exposure

The study, found at idexx.com/ckdstudy, showed two key findings: 1) dogs with *Ehrlichia* antibodies in *E. canis*-endemic areas have a 300 percent increased risk of kidney disease; and 2) dogs with *B. burgdorferi* (the causative agent of Lyme disease) antibodies in Lyme-endemic areas have a 43 percent increased risk of kidney disease.

A blue dot on a comprehensive pet-side vector-borne disease screening test, which indicated exposure to infected ticks, can be quickly and easily followed up with routine blood work and urinalysis to determine if there is hidden (or underlying) tick-borne disease.

What are the next steps for a blue dot on an apparently healthy dog?

If there is a positive result for Ehrlichia/Lyme, you also can run an IDEXX SDMA test annually to monitor kidney function and identify any potential disease earlier. Finding increased SDMA levels in a dog with verified tick exposure indicates an immediate course of action



to investigate, manage, and monitor possible kidney disease with guidance from the IDEXX SDMA test diagnostic algorithm. If SDMA increases are stable, then chronic kidney disease treatment based on International Renal Interest Society staging can be initiated.

What else can veterinarians and pet owners do?

Help your clients understand that year-round tick prevention and annual testing are integral to the health of their pet. Checking regularly for ticks, using preventives consistently as prescribed, and testing annually all are ways to keep more dogs healthy. ●

Melissa Beall, DVM, Ph.D. is medical affairs manager for IDEXX Laboratories Inc.

Protein: Protein restriction in CKD patients is often thought to be important, but based on the available evidence, protein restriction is not warranted in cats or dogs with early CKD, Dr. Laflamme said. If a commercial renal diet is fed for its other benefits, the recommendation is to select a higher-protein option. In one study, cats fed a higher-protein diet had better inulin clearance and lower serum creatinine. They also maintained body weight better than cats fed a lower protein diet.

“Look for kidney diets that have more protein, while still restricting phosphorus,” Laflamme said. “I have been known to recommend feline renal diets for dogs with CKD due to the higher protein content.”

Sodium: Hypertension and proteinuria are common findings in pets with CKD, but severely restricting dietary sodium is not a necessary part of managing those conditions. Sodium restriction has been shown to activate the renin-angiotensin-aldosterone system (RAAS), which can contribute to muscle wasting. According to Dr. Laflamme’s proceedings, existing evidence does not support feeding sodium-restricted diets to cats with CKD.

Fatty acids: Currently, evidence supporting a benefit from fatty acids for cats with CKD is weak. One study of healthy cats fed a diet rich in n-3 PUFA found they had increased renal blood flow and GFR. There appear to be potential benefits from n-3 PUFA in dogs with CKD, including reduced proteinuria, decreased intraglomerular hypertension, maintenance of GFR, increased survival, and decreased renal lesions. Future research may show benefits for cats as well.

Potassium: Hypokalemia occurs in 20 percent to 30 percent of cats with CKD, as well as in dogs, but the condition may be masked until body stores are depleted. A nonacidifying diet with adequate potassium is important for renal function, but because hyperkalemia occasionally occurs in pets with CKD, it’s important to assess each patient individually and recommend potassium supplements as needed.

Feeding finicky pets

Keeping CKD patients both happy and well fed is not always easy. It can be difficult to persuade cats and dogs to switch to a new food.

If possible, transition CKD patients to a TRD while the disease is in its early stages, when animals are more likely to have a better appetite and be more willing to switch foods. Send home samples of several recommended diets and let the pet choose the one it likes best. Reassess the pet’s



Two CKD-associated complications that can affect appetite are hyperphosphatemia and hypokalemia. Managing these conditions may help improve appetite. Watch weight to know if a pet is benefiting from a TRD. If it is decreasing, something needs to change. It may be necessary to let the animal eat its preferred food and supplement with intestinal phosphate binders.

condition, including how it likes the food, after it has eaten it for one to two weeks.

For animals with a poor appetite, wait to reach for an appetite stimulant, Caney said. First, try to find and treat causes such as dehydration, electrolyte and acid-base imbalances, nausea or vomiting, and chronic pain from osteoarthritis or other conditions. Instruct owners to ensure the pet has a comfortable, safe place to eat, free of intrusion from other pets or children.

Other complications associated with CKD that can affect appetite are hyperphosphatemia and hypokalemia. Managing these conditions may help to improve appetite, Cline said.

Watch weight to know if a pet is benefiting from a TRD. If it is decreasing, something needs to change. It may be necessary to let the animal eat its preferred food and supplement with intestinal phosphate binders.

“We may need to forgo the diets we want for the cat for the one the cat prefers and then look to additional supplements or additives to accomplish the proper nutritional goals,” Marshall said.

As always, each pet has its own preferences.

“A therapeutic kidney diet may not always be a one-size-fits all for every patient with CKD,” Cline said. “When I am evaluating my patients, I look at IRIS staging, diet history, and physical exam parameters when making diet recommendations.” ●

Nutrition Essentials



Part Two

The trials of therapeutic diets

By Jackie Brown

The trials of therapeutic diets

Tackling the complicated issue of dermatologic disease through food

Client misconceptions and behaviors can be the biggest barrier to successful outcomes when prescribing therapeutic diets for dermatologic disease.

“Pet owners are more likely to think that their pet has a food allergy than environmental allergies,” said Cailin R. Heinze, VMD, DACVN, assistant professor of nutrition at Tufts University’s Cummings School of Veterinary Medicine in North Grafton, Mass. “I think the marketing of pet food, like marketing grain-free diets for pets with allergies, and marketing all these exotic proteins and limited-ingredient diets make pet owners think that food allergies are much more common than they actually are. Probably 90 percent of the allergic disease we see in dogs is not related to food—maybe even a higher percentage.”

“Some of the common diet misconceptions that I hear from clients are a) raw food is healthier, b) grain-free is better, and c) higher protein foods are ‘hot’ leading to ‘hot spots,’” said Jon D. Plant, DVM, DACVD, owner of SkinVet Clinic in Lake Oswego, Ore.

Another obstacle is clients who expose their itchy pets to many different ingredients by frequently switching between different over-the-counter diets in an effort to identify an agreeable diet on their own. This makes it extremely difficult to take a detailed diet history and identify a novel diet for food elimination trials.

“Many owners take it into their own hands to diagnose their pet with food allergic disease and they’re doing it incorrectly,” said Martha G. Cline, DVM, DACVN, president of the American Academy of Veterinary Nutrition.

Some pet owners regularly rotate their pet’s diet, even if the pet is not showing signs of an adverse food reaction. This is either in a misguided effort to “fend off” the development of food allergies down the road or simply to provide more variety in their pet’s diet because they themselves wouldn’t want to eat the same thing every day. This is difficult to identify novel protein and carbohydrate sources for an elimination trial if the pet skin disease.

“We have no data that says that if you change protein every so many days you’re going to prevent a food allergy,” said Dr. Heinze. “My advice to puppy owners is to not feed anything exotic, to avoid diets that have four and five different protein sources in them, and to try and feed simpler diets.”



One of the biggest challenges of diet trials is owner compliance with the strict rules.

“Maybe they rotate between a chicken diet and a beef diet, but there’s absolutely no reason to feed duck or alligator or wild boar to a normal, healthy puppy,” Heinze said. “The whole concept of a pet food is that they’re designed to meet the nutritional needs. Baby formulas are probably the closest comparison—they’re designed to meet all of the nutrient needs for that life stage.”

Clients might balk at the expense of a hydrolyzed therapeutic diet, but in many cases that is the best option if the patient has been exposed to many different diet ingredients or if the client can’t remember exactly what their pet has and has not been exposed to.

“I recommend a novel-protein diet when a client has a detailed diet history for the pet and we can feel confident that we are switching to a unique protein source,” Dr. Plant said. “When that is not the case, then I recommend hydrolyzed protein diets. For clients with the time and commitment necessary, a home-prepared novel protein diet can be an excellent choice.”

Home-prepared diets are not without their challenges.

“Often, the whole proteins that we have as options are exotic meats,” Heinze said. “I have a client who’s spending \$15 per pound on bison and the dog is eating half a pound a day. That can get really expensive really fast.”

For some patients, a home-prepared novel ingredient diet is the only option, but it’s important to get the client completely on board.

“Some animals won’t eat a therapeutic diet that we want to put them on, so we get stuck doing a home-cooked diet,” said Dr. Cline. “It can be really



tedious for pet owners to make their own food, especially when you're dealing with a large-breed dog. Owners be aware of the amount of work that it may entail. It should be under the guidance of a veterinary nutritionist, and if they're going to be on a home-prepared diet long term it needs to be complete and balanced."

Ingredient contamination and serum testing

"A number of studies¹ have been published in the past few years that report finding undisclosed protein sources in OTC limited ingredient and veterinary hydrolyzed foods," Plant said.

One study found DNA from one or more animal species other than those declared on the label in nine out of 10 OTC diets analyzed.² Another study found soy antigens in three of four OTC diets claiming to be soy free and even veterinary therapeutic diets labeled soy free contained varying levels of soy antigen.³

Recent research investigating the accuracy of in vivo or in vitro tests for adverse food reactions has indicated that these tests showed low repeatability and, in dogs, a highly variable accuracy.⁴

"We did a study that showed lots of healthy dogs with no clinical signs of allergies were positive on these tests," Heinze said. "I still see a ton of my clients come in with printouts of these allergy tests. Some of them are owner driven and the owners insist, but I think vets still recommend

some of these tests because they hope that there are maybe some benefits to them."

Ensuring client compliance

One of the biggest challenges of diet trials is owner compliance with the strict rules.

"We can recommend all we want, but owners are not going to be compliant," Cline said. "I have a handout that I give to clients. I go over everything in the handout with them, but then I give them the printout and tell them to please read it when they get home in order to remind themselves."

Heinze also uses handouts to help reinforce the diet elimination trial rules that lists dos and don'ts a client might not think about.

"Giving them something so they have a reference for when they get home and they're trying to explain it to their other family members can be helpful," she said. "Make sure that they're on board for doing it because doing a food trial and not doing it right ... you're spending a lot of money potentially for a hydrolyzed diet, and then you're ruining it. I can't tell you how many pet owners that I end up seeing that are feeding a hydrolyzed diet and then adding chicken breast to it, which entirely defeats the purpose." ●

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⁴ [bmcvetres.biomedcentral.com/articles/10.1186/s12917-017-1142-0](https://www.bmcvetres.biomedcentral.com/articles/10.1186/s12917-017-1142-0)

The endless search for "new" novel proteins

These days, veterinarians are finding it more and more difficult to identify novel protein ingredients for elimination trials.

"Many of the novel protein diets that we are used to using are no longer novel because these protein sources are pretty ubiquitous in the over-the-counter market," said Martha G. Cline, DVM, DACVN, who practices at the Red Bank Veterinary Hospital Healthcare Network, which has multiple locations in New Jersey, and is president of the American Academy of Veterinary Nutrition.

With lamb, bison, wild boar, and even kangaroo no longer rare in the pet food marketplace, veterinary therapeutic diet manufacturers are turning to more exotic protein sources like alligator. Alice Jeromin, RPH, DVM, DACVD, practice owner at Veterinary Allergy & Dermatology Inc., in Richfield, Ohio, presented on the topic at VMX 2018 in Orlando.

"Why consider alligator in a diet to rule out food allergy?" she asked. "Because we have run out of novel proteins for testing. Novel proteins are now hard to come by with the advent of over-the-counter limited-ingredient foods, [but] these diets are not suitable for use in

testing for food allergies in pets as studies show they may contain additional ingredients not listed on the label."

When using exotic proteins, Cailin R. Heinze, VMD, DACVN, prefers utilizing commercial veterinary therapeutic diets rather than home-prepared when possible.

"It's hard to get nutritional information on bison or kangaroo or alligator or ostrich," said Dr. Heinze, who is assistant professor of nutrition at Tufts University's Cummings School of Veterinary Medicine in North Grafton, Mass. "If I don't have a full nutrient panel, then I have to guess whether this diet is meeting the pet's needs or not, or we have to spend a couple thousand dollars to analyze the diet. It's also hard to get quality kangaroo in this country, and there's been some questions recently about the nutritional value of kangaroo, so it gets very complicated."

Alligator hasn't hit the OTC marketplace yet, so veterinarians have a new novel source—for now.

"It may be coming eventually, and so I think some practitioners, including myself, find ourselves needing to use hydrolyzed protein diets," Dr. Cline said. ●



A COMPLETE NUTRITIONAL APPROACH TO ALLERGIC DERMATITIS

From Diagnosis to Long-Term Management

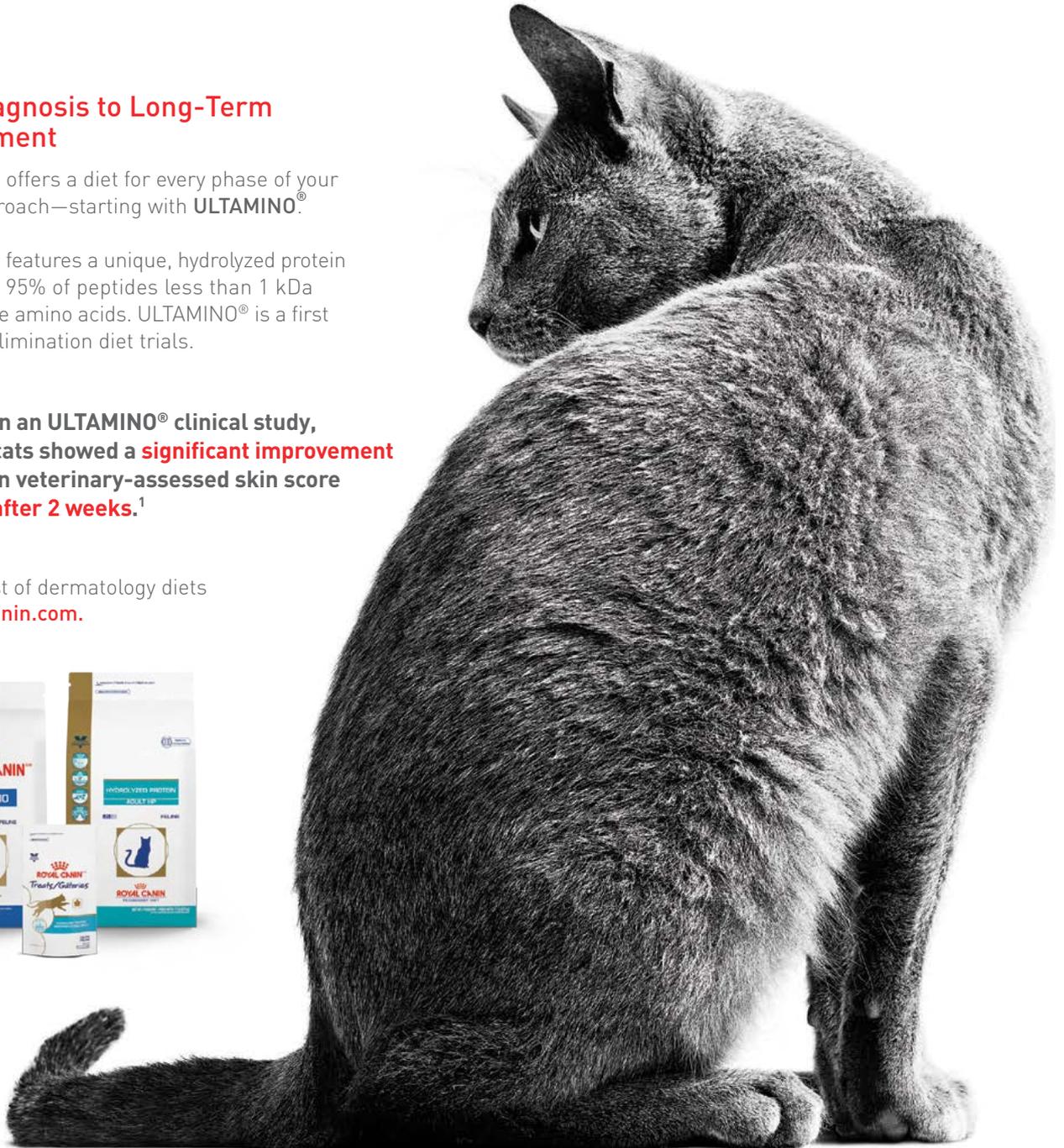
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¹Clinical trial on ULTAMINO® feline, 2016. Royal Canin data on file.
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Nutrition Essentials



Part Three

Fit from fat

By Ernie Ward, DVM

Fit from fat

Art-and-science strategies to help clients' pets shed pounds

I must confess: I believe most pet owners dread hearing me suggest a weight loss plan for their pet. I also confide that I think many veterinarians tremble at the thought of proposing a weight loss plan. To further complicate matters, I believe pet weight loss is as much an art as it is a science. Sure, there are hundreds of scientific studies and decades of research to guide clinical approaches, but in the end, it's the nuances, tweaks, and subtle shifts we incorporate that lead to success ... or to failure.

The first two steps

Before we dig into nutrient profiles, calories, and exercise, there are two essential first steps to take. First, the veterinary team must recognize weight gain or obesity in a patient, which is best accomplished by comparing a pet's last-documented weight to its current weight and performing a body condition score. Identifying early weight gain prior to the onset of obesity provides an excellent intervention point. Once the veterinary team establishes any increasing or excessive weight or body fat, they must present this fact to the pet owner.

The pet owner must take the second step. We can't help pets until owners are ready to act on their pets' behalf. I've found that many veterinarians become frustrated when clients aren't willing to tackle an obesity diagnosis. After repeated owner pushback, veterinarians often abandon the conversation.



Recognize that clients have their own lives, biases, and priorities. Our obligation isn't to judge whether a client pursues a proposal—it's to *offer* the proposal. Obesity (like cancer, diabetes, kidney disease, and other chronic conditions) can overwhelm a pet owner, and it may take time or perhaps a medical crisis before they take action. Make peace with reality, be patient, and don't shirk your professional duty to offer the best care for every patient at every visit.

Destination and duration

Pet owners must clearly understand our clinical goals and when we expect to see results. My favorite health journey destination is restoring a physical ability or reclaiming a loved activity. Uncover these hidden quality-of-life cues by asking the client to describe their pet's favorite playtime or what skill they'd like to see revived. Jumping into a car, taking a walk in the park, or hopping on the couch or counter are common goals for my weight-loss patients. I've found that focusing on quality-of-life measurements is more meaningful than shed pounds or shrunken inches.

Focus your weight-loss programs on daily life instead of arbitrary weights and measurements. Research shows that as little as a 6 percent weight loss increases a dog's quality of life.

Duration depends on the amount of weight to be lost. In simple terms, cats can lose about 0.5 pounds per month safely, while dogs can drop 3 to 5 percent of their body weight every 30 days. That equals two months per pound of weight loss in cats and a total weight loss program of six to 12 months for most obese dogs. I've found that if I emphasize a target weight and date that exceeds six months, I lose many clients. That's why I started using the step weight-loss program with three-month targets nearly 20 years ago.

Simplified step weight loss

The safest, most successful way to help pets lose weight is to pursue small goals over time. Science tells us that gradual weight loss helps preserve





Step weight-loss program overview

- Determine ideal and target weights
- Determine conservative monthly weight loss
 - 1 to 2 percent of current body weight per month for cats, minimum 0.5 pounds per month
 - 3 to 5 percent of current body weight per month for dogs
- Determine total length of time to reach target weight
 - 9 to 12 months maximum in most cases
 - 6 to 9 months optimal time period for most clients
- Divide total period into one- to three-month intervals for step weight loss.



the dog's present weight, and the ending floor is the dog's ideal weight. There are many ways to move from one floor to another, but the safest and surest way is to take a series of steps that lead to that goal. Too often, veterinarians and pet owners want to take a speedy elevator ride, but quick fixes often result in temporary improvements as opposed to a lifetime of healthy habits. Patience, perseverance, and discipline are required to make meaningful changes. By achieving a series of small goals with close support, lifestyle changes are easier to maintain.

How long does this process take? While no one answer applies to every situation, most dogs should be able to reach their ideal weight in six to 12 months. Healthy dogs that are able to exercise more vigorously may see results faster. Older dogs or those with arthritis or other medical conditions may require more time. In general, dogs that need to lose less than 30 percent of their body weight should reach their ideal or normal weight within six months. For dogs that need to lose more than 30 percent of their current body weight, the time period may be extended to nine to 12 months. Because of their different physiology, cats with obesity require a longer period to reach their ideal weight.

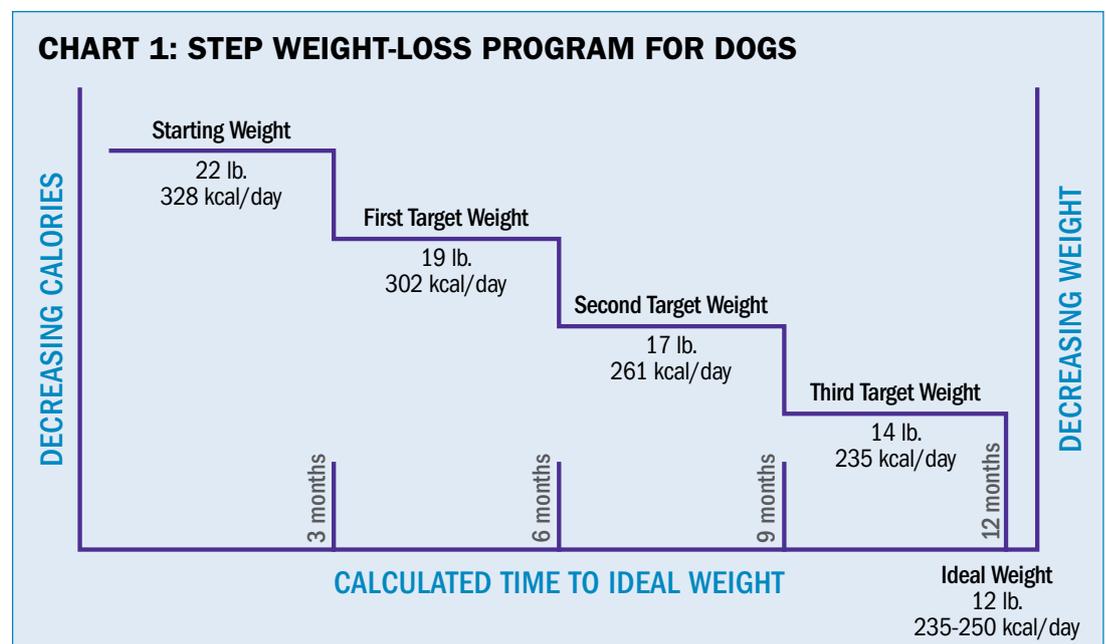
muscle mass and avoid potential nutritional deficiencies. Many pets, especially dogs, initially experience tremendous weight loss during the first three months; then the rate plateaus over time. This normal physiological adaptive response means you must monitor patients closely and adjust the plan accordingly, step by step.

I call this a stair-step weight-loss plan. Think of a flight of stairs, where the goal is to get one from one floor to the next. The starting floor is

Calculating calories

Every pet weight-loss program begins with calculating calories. Most pet owners don't know

CHART 1: STEP WEIGHT-LOSS PROGRAM FOR DOGS



how many calories their pet needs each day or how to correctly feed their companions. Most pet food feeding suggestions can't be trusted. Complete and balanced maintenance pet food feeding guides are formulated for adult, unsprayed/neutered active dogs and cats. That means if you have an older spayed or neutered indoor pet patient, the owner probably is feeding 20 to 30 percent too much if she follows the label.

During every visit, calculate each pet's precise caloric needs based on breed, age, gender, concurrent medical conditions, and lifestyle. A simple starting point is this resting energy requirement (RER) formula: Divide the pet's weight (in pounds) by 2.2, multiply by 30, and add 70. This formula provides a general idea of how many calories a typical inactive, indoor spayed or neutered dog or cat weighing between 6 and 60 pounds needs each day.

A more precise calculation is body weight in kilograms raised to the $\frac{3}{4}$ power by 70. For more active dogs to maintain weight, multiply by 1.1 to 1.2; for weight loss, multiply by 0.8 (as a start). I've found most cats will maintain weight on RER calories and lose weight at 70 to 80 percent RER. Regardless of the mathematical method you prefer, I urge you to provide this important information every time you see a pet.

Protein, fat, and carbs?!

Determining the nutritional formulation of a weight-loss diet matters. Approach obesity treatment with an open mind; there is no single best diet. Different pets do better on different nutrient profiles. In general, I start my patients off on a high-protein, high-fiber therapeutic diet. I almost exclusively use canned diets with my feline patients. I'm a long-time advocate for low-carbohydrate diets for weight loss, especially in cats. Approximately 10 percent of my clients pursue home-prepared food for their pet.

Palatability and owner perception of food acceptance is critical to program adherence. This is why offering multiple choices is vital and explaining that weight loss is a journey, not necessarily a destination. Cats "addicted" to "kibble crack" may require considerable patience and effort to transition to high-protein canned or home-cooked food. I've found it difficult to help a cat lose weight on a high-carbohydrate diet. Your results may vary.

In short, effective weight loss dietary formulation is a mixture of evidence and experience. After doing this for more than two decades, I can't think of a single patient that remained on the same diet throughout their weight-loss journey. That doesn't mean therapeutic diets don't work; it proves the body is excellent at adapting.

CHART 2

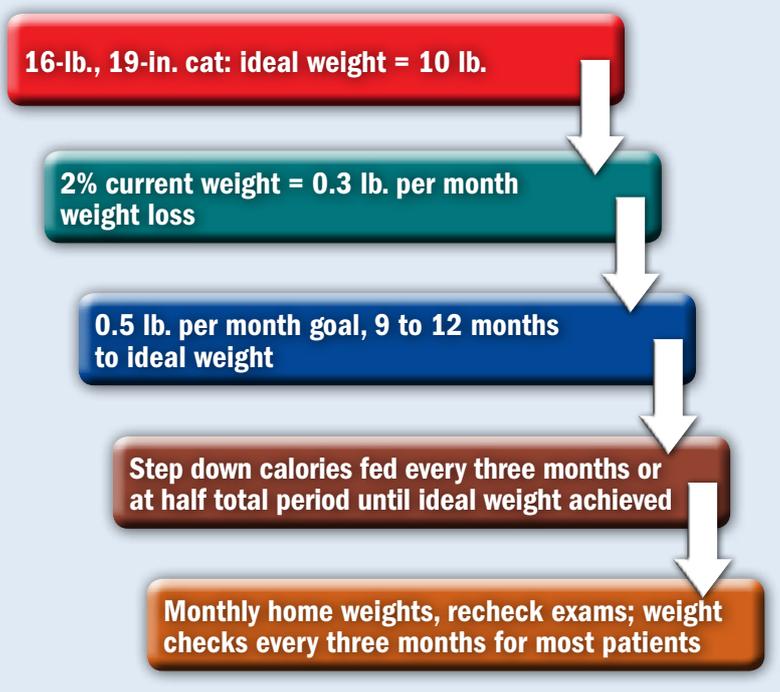
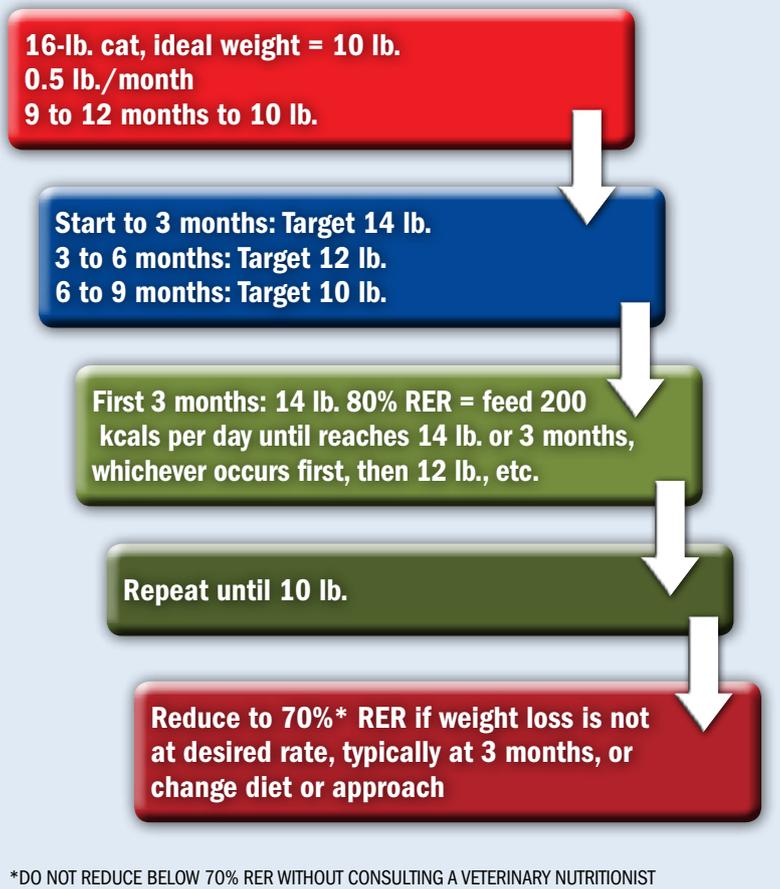


CHART 3: STEP WEIGHT LOSS



*DO NOT REDUCE BELOW 70% RER WITHOUT CONSULTING A VETERINARY NUTRITIONIST

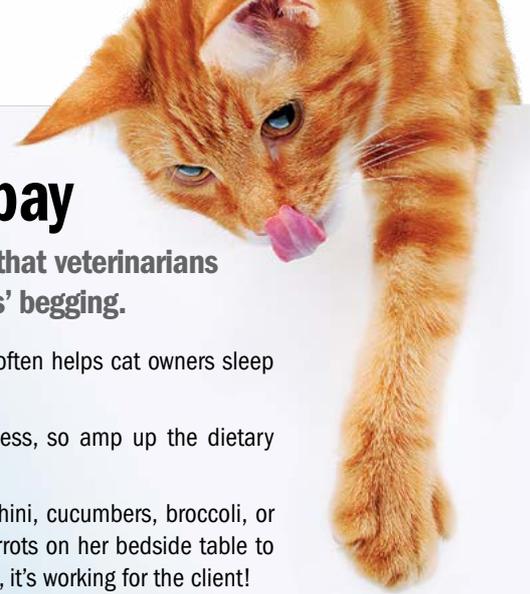
Keep little beggars at bay

Ernie Ward, DVM, offers his three favorite tips that veterinarians can share with owners to discourage their pets' begging.

Midnight snack: An additional feeding just before bedtime often helps cat owners sleep until 4:30 a.m. ... before the first pounce strikes.

High protein: Protein creates satiety and a feeling of fullness, so amp up the dietary protein for pestering patients.

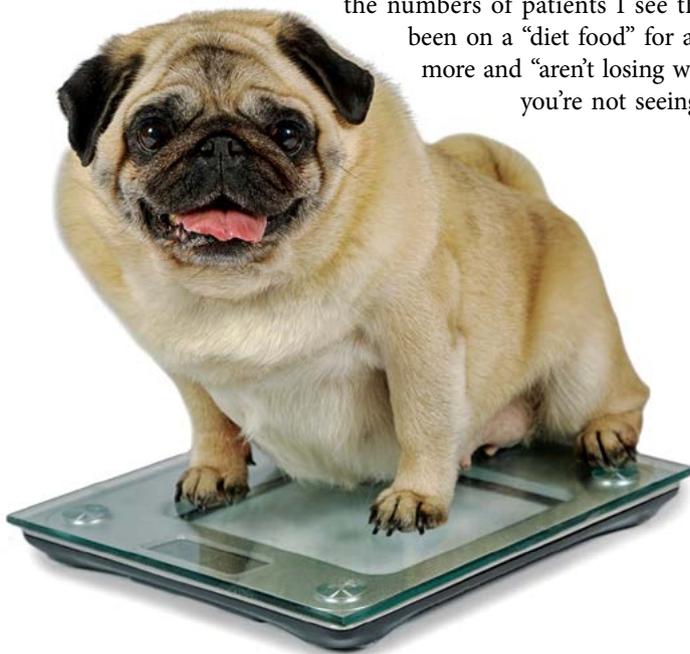
More veggie snacks: Load dogs up on carrots, sliced zucchini, cucumbers, broccoli, or celery. I instructed one client to place a bowl full of baby carrots on her bedside table to dole out during the evening. While it's not ideal in my opinion, it's working for the client!



Plateaus and pestering

Two main reasons for weight-loss failure are plateaus and pestering. Plateaus can occur when a pet stops losing weight; pestering occurs when neurochemical changes prompt behavioral changes. Both challenges can be overcome successfully.

I developed the step weight-loss program to help mitigate begging behaviors triggered by caloric restriction and identify plateaus as quickly as possible. A more gradual reduction in calories coupled with boosting protein levels seems to lessen most begging. Reweighing every three months allows me to spot real trends and change treatment. When I encounter a plateau, I change the diet or I reduce from 80 to 70 percent RER. (I never reduce below 70 percent RER without thoroughly analyzing the patient's current health status and complete nutritional intake profile or consulting with a veterinary nutritionist.) I'm still amazed at the numbers of patients I see that have been on a "diet food" for a year or more and "aren't losing weight." If you're not seeing weight



loss results within 90 days, change your tactic, and change the food.

The last five to 10 percent of weight loss is often the most challenging. Lean muscle mass is built at this time; abdominal fat is reduced. Most pets require an increase in physical activity during the final stage of their weight-loss plan in order to reach their ideal weight. Dogs and cats are naturally lean creatures with long muscles and relatively light skeletal mass. To achieve the desired level of fitness, dogs and cats need to return to the active lifestyles from which they evolved. Dogs kept indoors most of the time have difficulty developing the strong muscles and support tissues required for an ideal healthy body composition without structured daily exercise. Cats must be encouraged to play and engage their "inner predator" daily. Food puzzles, "hunting for food," daily playtime, and lots of environmental enrichment are fundamental to a healthy life for our pets.

Just the beginning

In this article, I've shared some of my best practices as a pet weight-loss expert over the past 25 years. We're each called to help animals in our own ways using our unique talents. For me, the pet-human weight-loss journey is still beginning, even after all these years. Remain intellectually curious, observe with an open mind, and always give your best to those we serve. ●

Dr. Ernie Ward has spent his entire career practicing, writing about, teaching and encouraging better care for animals to earn the title as America's Pet Advocate. Whether he's discussing the dangers of obesity, how to perform a physical examination, dealing with behavioral issues, answering pet owner's questions about nutrition or surgery, or innovating better care for aging pets, his unifying theme is: Do what is in the pet's best interest.



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References: **1.** Flanagan J *et al.* Success of a weight loss plan for overweight dogs: the results of an international weight loss study. *PLoS One* 2017;12(9):e0184199. **2.** Hours MA *et al.* Factors affecting weight loss in client owned cats and dogs: data from an international weight loss study. Proc of 16th Annual AAVN Clinical Nutrition and Research Symposium; Denver (USA); June 8, 2016. **3.** Murphy M. Obesity treatment. Environment and behavior modification. *Vet Clin North Am Small Anim Pract.* 2016;46:883-898. **4.** Satiety Consumer Study (11 - 21-14). IPSOS 2014. **5.** Courcier EA *et al.* Prevalence and risk factors for feline obesity in a first opinion practice in Glasgow, Scotland. *J Feline Med Surg.* 2010;12(10):746-53. **6.** Rohlf VI *et al.* Dog obesity: can dog caregivers' (owners') feeding and exercise intentions and behaviors be predicted from attitudes. *J Appl Anim Welfare Sci.* 2010;13(3):213-236. **7.** McGreevy PD *et al.* Prevalence of obesity in dogs examined by Australian veterinary practices and the risk factors involved. *Vet Rec.* 2005;156(22):695-702. **8.** Royal Canin Internal Study, data on file.

Nutrition Essentials



Part Four

Nutrition's role in cancer patients

By Kim Campbell Thornton

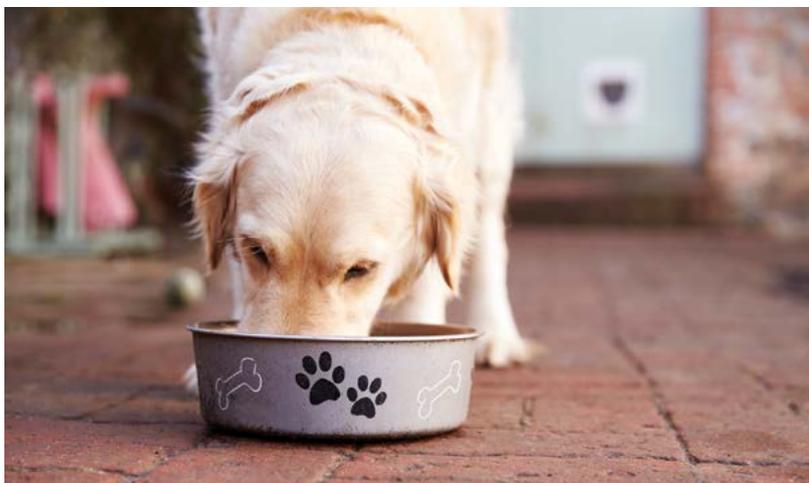
Nutrition's role in cancer patients

Nutrition is always important in helping a sick pet get better, and it can be an essential element of care for cancer patients and for pets recovering from debilitating illnesses or surgery. Cancer and its treatments may alter the body's ability to tolerate particular foods or use certain nutrients; moreover, clients often have a firm belief in nutrition as good medicine and may ask about or even insist on special diets or supplements for pets undergoing cancer treatments or otherwise in need of tender loving care.

When a pet is diagnosed with cancer or faces a long recovery period, it's an opportunity to team with clients to ensure optimal calorie intake and nourishing sustenance during treatment and healing. Here's what to know about the latest research into diets for oncology patients and communicating with clients about a pet's nutritional needs.

Current research

Contrary to what clients may have found through Google, it can be disappointing to them to learn little evidence is available that a particular type of diet is linked to development of cancer or that



changing the diet of a pet who has been diagnosed with cancer will have a survival benefit.

"There is an abundance of recommendations out there—low-carb, high-protein, raw, ketogenic—but there's no actual in-the-dog data that 'We tested this theory and this was proven to increase survival,'" said Cailin R. Heinze, VMD, DACVN, assistant professor of nutrition

The role of supplements

Owners often want to give supplements to pets with cancer in hopes they will help support the immune system. In general, certain supplements probably won't hurt and may help. Fish oil and mushroom extracts are backed by the most solid data, although not necessarily in dogs and cats.

The evidence for fish oil is interesting, with a number of studies in humans and in rodent models, as well as one controversial study in dogs, said Cailin R. Heinze, VMD, DACVN, assistant professor of nutrition at Cummings School of Veterinary Medicine at Tufts University. As far as efficacy, it's in no way comparable to chemotherapy or radiation or surgery, and it's unlikely to provide a survival benefit, but it may have more subtle effects on a pet's well-being.

"I think fish oil is a very reasonable thing to supplement if your pet tolerates it," Dr. Heinze said. "We can't tell you exactly how much is ideal, but certainly it's something that is reasonable to try."

Advise clients that some pets may have gastrointestinal side effects from too much fish oil. Others may experience effects on blood clotting, depending on the medication they're taking. Some studies in rodent models have shown decreased immunity with high doses.

The evidence is similar for mushrooms, which have been used in traditional medicine in China and elsewhere for as long as people



have been around. A few studies have been done on the effects of mushroom extracts for treating cancer in dogs, and the results have not been dramatic. One of the biggest drawbacks is expense. For example, one of the more common products used in one study could cost several hundred dollars a month for a large dog, Heinze said.

"You run into the question of not only is it unclear how much of a difference it actually makes, but it's also very expensive," she said. "But in general, if people want to use supplements, I would say fish oil and mushroom extracts are probably the ones I think have the most data behind them. There's a ton of other supplements out there that are advertised for pets with cancer, but I think the data to support them is significantly weaker." ●

“In the case of cats, little to no research has been done on the relationship between diet and cancer treatment. In part, that’s probably because cats are less likely to receive treatment for cancer. What is known is that cats with cancer are more likely to be underweight, so they tend to have more muscle wasting and more weight loss than dogs.”

at Cummings School of Veterinary Medicine at Tufts University. “I think that’s a big challenge because a lot of pet owners read on the internet about these cancer-cure diets and then they get disillusioned when they come to their oncologist or they come to me or one of my colleagues and we say, ‘Actually, there’s no evidence diet makes a big difference in cancer.’”

What researchers have found is that diet may help support canine cancer patients through treatment and recovery. Investigators at Colorado State University monitored canine cancer patients, looking at body-weight ratios, percentages of body fat and lean muscle mass, protein contents, the benefits of fatty acids and fiber, patterns in metabolic rates, eating habits, and more.

In some cases, they found foods containing relatively low amounts of simple carbohydrates, moderate amounts of good-quality proteins and soluble and insoluble fiber, and moderate

amounts of fats could help reduce or eliminate some of the metabolic changes that occurred with cancer cachexia.

In other research, Dr. Heinze and her colleagues looked at whether a pet’s body condition—underweight, overweight, or normal—affected prognosis in certain cancers. Separate studies looked at various markers of metabolism in dogs with cancer versus healthy dogs, as well as whether diet could influence quality of life, if not survival. Some of the latter data was presented at the American College of Veterinary Internal Medicine Forum this year.

“We found there was some suggestion in our trial that potentially diet may be able to do that,” Heinze said.

In the case of cats, little to no research has been done on the relationship between diet and cancer treatment. In part, that’s probably because cats are less likely to receive treatment for cancer. What is known is that cats with cancer are more likely to be underweight, so they tend to have more muscle wasting and more weight loss than dogs.

“It’s actually not that common for dogs to get super-emaciated with cancer,” Heinze said. “There aren’t many types of cancer that are very common in dogs where you actually get wasting. Cats are more likely to get wasting with cancer and so that may affect their prognosis.”

Despite the overall lack of information, foods are available to help provide nutritional support

Diets for convalescent pets

Pets recovering from a serious illness or traumatic injury may have special dietary needs. The type of diet recommended for a convalescent depends on the condition and can range from tube feeding to a specialized diet. Often, the pet’s normal diet suffices.

Critical-care diets are palatable and digestible, are high in energy density, and have moderate to high levels of protein. These foods are designed to be made into a slurry that can be put down a feeding tube or fed to a willing pet through a syringe or in a bowl. When deciding whether this type of diet is appropriate, consider the patient’s condition, said Cailin R. Heinze, VMD, DACVN, assistant professor of nutrition at Cummings School of Veterinary Medicine at Tufts University.

For instance, pets recovering from gastrointestinal surgery who will eat on their own may do best with highly digestible food designed for pets with gastrointestinal issues. Pets recovering from orthopedic surgery probably don’t need anything other than their normal food, although they should receive reduced amounts to prevent weight gain from decreased activity. Pets recovering from a bad case of pancreatitis will need a different diet than those recovering from being hit by a car.



Dogs who turn up their noses at their regular food or a therapeutic diet may eagerly eat cat food, which often has a strong aroma and is high in protein, making it more palatable. If cat food is going to be fed longer term, however, it should be checked to make sure none of the nutrient levels exceed the maximums for dogs.

“If they’re not eating well, then using one of the really high-calorie diets or even home cooking for a few days can certainly be done,” Dr. Heinze said. ●

for pets with cancer. Those diets may help improve quality and length of life for some cancer patients.

What pets need

The ability to absorb nutrients and maintain a healthy weight is essential to fighting cancer effectively, as well as to maintaining quality of life. During treatment, animals may experience cancer cachexia, especially if they are on a chemotherapy or radiation regimen. Cancer-related changes in metabolism can cause decreased appetite, leading to reduced response to treatment and a greater likelihood of side effects associated with chemotherapy, radiation therapy, and surgery. The result can be shorter survival time.

This is one of the areas where you can work with clients to optimize caloric intake. Meeting cancer patient energy needs is important to ensure they don't lose muscle or excess weight, which can decrease their body's ability to fight the disease. A diet with high energy density can help them maintain a healthy weight.

Nutritional recommendations also may vary depending on the type of cancer. For instance, if the cancer is targeting a specific organ, such as the kidneys, a therapeutic diet designed for kidney disease may be the best choice. For dogs who may have a fat intolerance, use low-carbohydrate, high-fat diets with caution. Dogs with a history of pancreatitis should not be fed a low-carbohydrate diet.

Talk to clients about what their pets eat and explain what is known and unknown about the effects of diet on cancer. If they are feeding a diet that is not complete or balanced or giving the pet too many treats, help them transition the animal to a higher quality food. Beyond that, with some exceptions, you can leave the choice of food up to the owner.

Some owners choose to feed a diet low in carbohydrates, even though that has not been shown to make a difference in survival, Heinze said. Others prefer to prepare a pet's food themselves. It gives them an element of control because they are choosing the ingredients. Feeding a home-cooked diet also can be a bonding experience with the pet. Finally, a home-cooked diet may be an option for pets who aren't eating well because they don't feel good.

"I just work with my clients to help them have the healthiest diet possible, however they want to approach it," Heinze said.

The primary goal in treating cancer patients is to make sure their diets are nutritionally complete and balanced and they're getting enough calories, said Bruce Kornreich, DVM, PhD, DACVIM, associate director of the Cornell Feline Health Center at the



Cornell University College of Veterinary Medicine. That can be problematic when owners want to prepare homemade diets for pets who are ill. Without expert formulation, homemade diets can be deficient in multiple essential nutrients.

"Making a homemade diet is not trivial, and it really needs to be done in consultation with the veterinary nutritionist," he said.

Many pets with cancer are on drugs that suppress the immune system. Their diet should be one that doesn't contribute to risk of illness. For that reason, veterinarians typically recommend against feeding a raw diet to pets with cancer.

"When a patient is immunocompromised because they're receiving, for example, chemotherapeutic drugs for cancer, they're going to be less able to fight off a bacterial infection in their GI tract, so feeding raw foods to a patient receiving chemotherapy could be a bad idea," Kornreich said.

Several commercial diets are available that meet nutritional strategies for supporting cancer patients. Recipes for homemade versions are also available from veterinary nutritionists.

The future

While diet may certainly have benefits for pets with cancer, there's still much to learn. No specific nutritional requirements have been established for dogs or cats with cancer, and questions remain about the optimum quantities of each nutrient and the effects on different types of cancers.

"People are working on it, and in the next few years, we may know a lot more, but right now there's no evidence that any specific type of diet either prevents, causes, or cures cancer or even dramatically affects the progression in pets," Heinze said. "I think we still have a lot to learn on how to optimize diet for cancer patients. We're probably decades away from really being able to do that well, but there's a lot of interest right now." ●



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