



Frequently Asked Questions

Our customized approach means that all cases receive individualized attention. Each case undergoes extensive medical record review, as well as evaluation of the detailed dietary history including treats and supplements. The process can be quite involved, and includes research including scientific literature review as well as quantitative computer analysis of data. This process ensures the development of a comprehensive and truly customized nutritional management plan. *For home-cooked diets, it is important to understand that the more criteria that need to be considered for an individual patient (specific strategies for disease management, multiple diseases, owner preferences for specific ingredients or feeding philosophies, pet acceptance of flavors/textures, etc.), the greater the limitations on which ingredients are possible.*

Working with UC Davis Nutrition Support Service

For Veterinarians: Please call us if you have a question regarding nutritional case management. If your case involves the need for a customized management plan, including a parenteral nutrition solution, tube feeding plan, or home-cooked diet formulation, please visit:

<http://nutrition.vetmed.ucdavis.edu>

Request forms for formulation can be downloaded and submitted either electronically or via fax. Please note all consults are billed directly to the requesting clinic and not the owner. In addition, all communication is conducted via the referring veterinarian, in order to adhere to regulations defining the establishment of a client-patient-veterinarian relationship. Members of the Nutrition Support Service cannot speak with owners directly unless they are seen for an appointment at the Veterinary Medical Teaching Hospital in Davis.

For Pet Owners: Our service technician can answer general questions regarding pet food labeling and feeding your healthy pet. More in-depth questions are best handled with an in-person appointment that can be set up by calling 530-752-7892 or through a remote consult submitted through your veterinarian to the UC Davis Nutrition Support Service.

Why can't owners speak with the veterinary nutritionist directly?

We are a support service, which means we support the referring veterinarian with the nutritional aspects of the case but do not have a direct client-patient-veterinarian relationship. Communications are best handled with the veterinarian that has the most familiarity with the case and can best evaluate how to use guidance from a variety of resources such as a radiologist, pathologist, and nutritionist.

If you would like to establish a direct client-patient-veterinarian relationship, we would be happy to see you and your pet for a direct appointment at the Veterinary Medical Teaching Hospital in Davis, CA.

Sources for Home-prepared Diet Recipes

Why are recipes from books and the internet not recommended?

The nutritional adequacy of many available 'generic' recipes is a concern. Recipes should be customized in part to take advantage of updated ingredient nutrient profiles, disease management strategies, or other factors. Also, many generic recipes include vague supplement instructions like "one human multivitamin." Unfortunately, there are hundreds of such products with highly variable nutrient content and which can also change over time. It is common to see deficiencies and excesses of essential nutrients if inappropriate supplement products are used. In addition, ingredients that were once thought to be safe can later be found to be potentially toxic. The most recent example is grapes and raisins, which can cause kidney failure in amounts easily consumed by dogs. Finally, nutritional knowledge is constantly evolving, and generic recipes may not incorporate that new knowledge.

We have published studies that document the concerns regarding nutritional adequacy of generic recipes:

Larsen JA, Parks EM, Heinze CR, and Fascetti AJ. Evaluation of recipes for home-prepared diets for dogs and cats with chronic kidney disease. *Journal of the American Veterinary Medical Association* 2012;240:532-538.

Stockman J, Fascetti AJ, Kass PH, and Larsen JA. Evaluation of recipes of home-prepared maintenance diets for dogs. *Journal of the American Veterinary Medical Association* 2013;242:1500-1505.

Wilson SA, Villaverde C, Fascetti AJ, and Larsen JA. Evaluation of recipes for home-prepared maintenance diets for cats. *Journal of the American Veterinary Medical Association* 2019;254: 1172-1179.

Who formulates the recipes that the Nutrition Support Service provides?

Recipes are formulated by clinicians of the Nutrition Support Service, including veterinary nutrition residents and faculty members. Faculty nutritionists are Diplomates of the American College of Veterinary Internal Medicine (Nutrition). These board-certified specialists are uniquely trained in the nutritional management of both healthy animals and those with one or more diseases. Among other skills, Board Certified Veterinary Nutritionists® are qualified to formulate home-prepared diets, manage the complex medical and nutritional needs of individual animals, and understand the underlying causes and implications of specific nutritional strategies that are used to prevent and treat diseases. They use their expertise and clinical experience to review the specific history of each patient to make custom recommendations for the patient. Even when very similar nutritional concepts may be used for different patients, plans are refined to meet the patient's specific caloric needs and ingredient preferences.

Data Used for Formulating

Where does the nutritional information come from?

Most of the nutritional data comes from the USDA National Nutrient Database but is supplemented with many other resources and databases.

What nutritional requirements are used when formulating?

Recipes are created by checking the ~40 essential nutrients against the nutrient profiles established by the Association of Animal Feed Control Officials and/or the 2006 National Research Council Nutrient Requirements of Dogs and Cats. The individual needs of each patient are also considered.

Energy Requirement/Determining How Much to Feed

How are the calorie targets determined?

We use standardized equations for calculating a pet's predicted energy requirement based on body weight. Ideally, we are able to use a patient's detailed diet history to determine their actual caloric needs, which is more accurate. Using an equation has a greater potential to either over- or underestimate a pet's energy requirement by as much as 50%. In either case, body weight should be monitored, and the amount fed may need to be adjusted to maintain/achieve an ideal body weight or condition.

What is an ideal weight for a pet?

We use a 9-point body condition scoring system that has been validated using methods of determining the amount of body fat. This system assigns a score based on the estimated amount of fat tissue. Patients that are at an ideal weight have ribs that can be felt but that are not easily seen and have a tapered waistline are assigned a "4" or "5" for dogs, and a "5" for cats, both on the 9-point scale. Extremely underweight pets are a "1" while grossly obese pets are a "9".

Recipe Components

Our nutritionists will create one customized recipe specifically for your pet, based on the medical and dietary history provided. If medically indicated, additional recipes may be requested for an additional fee.

Why are specific foods selected for the recipes?

We aim to select ingredients that the patient will find palatable and tolerable as well as being easily purchased and prepared. Specific forms of the foods are used as even subtle differences in preparation or different cuts or processing of foods can drastically change the nutritional profile of a food. Therefore, foods must match the recipe description exactly, including cooking method and cut of meat. Adding oils or flavorings should be avoided unless the recipe specifically directs these additions.



Can foods be substituted? What about treats?

Although variation is an appealing concept, it must be carefully done and is not necessary for a balanced diet. In fact, seemingly simple substitutions can potentially create deficiencies or excesses. For example, using ground beef instead of turkey breast would drastically change the calories, protein, and fat content of a recipe. Even changes that seem subtle can be problematic. For example, using pork shoulder instead of pork loin can drastically increase the fat content of a recipe while decreasing the protein content. Therefore, changes in a recipe or additional recipes should be requested at the start if a variety of different recipes is desired.

In some cases, a treat allowance can be incorporated to accommodate snacks as well as adding variety to the daily meals. Typically, treats can be given to patients on home-cooked diets if they are appropriate, and recommendations can be provided. However, in some cases treats are not recommended to better clarify the pet's response to the new diet. Sometimes recommendations will be given to stop treats at least temporarily in cases where there is a concern about the specific treat or where a history of food allergy is reported.

Can any vegetable oil be used?

All recipes are formulated to meet or exceed essential fatty acid requirements regardless of the specific fat source, so the recipe must be followed exactly to avoid deficiency. Corn oil is often used (especially in lower fat formulations) as it is rich in the essential fatty acid, linoleic acid. Other fat sources (canola oil, butter, etc.) are lower in linoleic acid, and larger amounts are needed to meet this requirement. These fat sources are sometimes used in diet formulations with higher fat levels, but ingredients are not directly interchangeable due to the variation in fatty acid profiles.

Why have the specific supplements been used?

The supplements have been selected for a variety of reasons. In the case of human supplement products, they are selected for their specific nutrient content. In the case of most products marketed for pets, these are designed to be added to commercial complete and balanced pet food and, therefore, they do not contain the correct amounts and proportions of essential nutrients to be appropriate for home-cooked pet food. We use specific products to balance the recipes, and typically provide 2 supplement options if appropriate for the pet. Supplements vary greatly, and substitution is never recommended, as this can lead to nutritional deficiencies and excesses. Specific brand name supplements should be used when specified.

Considerations for feeding raw diets

Raw pet diets are increasingly popular in some areas and are sometimes recommended by veterinarians. Proponents proclaim many health benefits associated with raw diets, and may state that canned and kibble commercial diets are harmful. There is some evidence of increased digestibility of specific raw diets compared to other specific diet types; however, this is primarily related to the fiber content, and the practical advantage is simply smaller stool which is not a health benefit. Overall, there remains no evidence of long-term health benefits of raw diets compared to other types of pet food.

On the other hand, there are documented risks of raw diets. Potential disadvantages will vary with individual raw diet and its particular attributes. However, the primary concerns are nutritional adequacy (excesses and/or deficiencies in essential nutrients) and contamination with pathogenic microorganisms (bacteria and parasites). A related but equally important concern specific to the use of whole bones is the significant risk of fractured teeth as well as gastrointestinal obstructions and perforations.

Although nutritional adequacy is a concern for both commercial and homemade raw diets, the primary concern is the risk of contamination with bacteria that cause disease in pets and people. Raw meat, fish, eggs, and dairy products are well documented to be common sources of such pathogens, and antibiotic resistance in these bacteria is a worrisome and ongoing issue in raw pet diets. There have been numerous recalls of commercial raw pet foods due to pathogenic bacteria despite the use of high-pressure pasteurization, freezing, freeze-drying, and other techniques by some manufacturers. However, there are also frequent safety recalls due to contamination of raw meat from supermarkets, so "human grade" foods are not necessarily safer.



It is a myth that animals do not become sick when consuming diets contaminated pathogens. There are many documented incidences of pets becoming ill from contaminated diets. Even pets who do not develop clinical illness when fed contaminated products still introduce a risk to humans and other pets through shedding of organisms in the feces and contamination of feeding bowls and surrounding environment. Feeding of raw diets is a documented risk factor for fecal shedding of Salmonella, E. coli, and Campylobacter in healthy dogs. One study showed that dogs fed a single meal of Salmonella-contaminated raw meat shed the bacteria in their feces for up to two weeks.

Importantly, there are now several documented incidences of illness and even death in people exposed to pets fed raw pet food or to the diet itself. Children, seniors, and immunocompromised individuals are at the greatest risk of adverse effects from exposure to pathogenic, zoonotic bacteria. Some evidence suggests that routine hygiene efforts may not adequately control risk. One study demonstrated that even scrubbing with soap, soaking in bleach solution, and/or using a dishwasher did not kill a significant number of bacteria on Salmonella-contaminated stainless steel and plastic pet food bowls.

Given the lack of any documented nutritional advantages and the strongly documented risks, we do not recommend feeding raw diets to dogs and cats. Any of the associated benefits, such as decreased stool volume, high palatability, control over ingredients, and others, can be safely achieved with the use of a properly formulated, balanced, home-cooked diet. Properly cooking the diet as well as ensuring adequate concentrations of all essential nutrients helps to control the risks yet still meet the desires of owners not interested in feeding canned or kibble.

Recipe/Food Preparation

I am not good at measuring in fractions; is there an easier way to measure?

The most accurate method to measure ingredients is to weigh them. When possible, our recipes provide common measures such as cups, ounces and teaspoons; however, gram amounts will always be given, and for some ingredients only weight measures are possible (meat for example). *The use of a kitchen gram scale is required for all recipes.* These are widely available and inexpensive.

It is important to also consider volume conversions. For example, 1/16th of a standard cup (8 fluid ounces) equals 1 tablespoon. Other common measure conversions include:

- 1 tablespoon = 3 teaspoons
- 1 pound = 16 weight ounces
- 1 weight ounce = 28.35 grams

Also note that "fluid ounce" is measure of volume and "ounce" is a measure of weight. Therefore, one ounce always represents the same amount regardless the type of food while one fluid ounce weighs different amounts and is dependent on the specific food's density. For example, one fluid ounce of water weighs more than one fluid ounce of oil (this is the reason why oil floats on water – it is lighter), but one ounce of water and one ounce of oil weighs the same (the oil just takes up more space).

How do I prepare a batch of the home-cooked food?

Most recipes provide the daily amount of food. Thus, simply multiply the amount of each ingredient by the number of days a batch is intended to last. Use the gram amount of each ingredient for this calculation for accuracy. For example, if a recipe calls for 300 grams of roasted chicken breast and a batch for one week or seven days is being made, multiply 300 by 7 to get the new amount of 2100 grams of roasted chicken breast.

Commercial Food Options

Are there commercial diet options that might also work in my pet?

If a commercial diet option is readily available and appropriate, this can be discussed. This is typically a better option for many patients since commercial food is more consistent, less expensive and time consuming, and more proven than any home-cooked diet. Some clients do not have the time or resources to cook for their pets, while others prefer it.

Feeding the Prepared Recipe

How quickly can I transition to the new food?

In general, a slow transition over at least 7 days is recommended when switching to a new food. Some pets are more sensitive to diet changes and do best with more gradual transitions.

Can the recipe be fed to other pets in the household?

No. Recipes are custom formulated for the specific patient and may incorporate nutritional strategies that when fed to another pet could be harmful.

Storing Food

How long can I store a prepared home-cooked food?

Prepared home-cooked food can be stored in an airtight container in the refrigerator (32-40°F) for two to three days or frozen (<0°F) for up to three weeks (less if high in long-chain omega-3 fatty acids/fish oil). The amount of food for a single meal should be gently warmed prior to feeding if refrigerated or frozen to increase the palatability of the food. Recipes are formulated without any preservatives, and care should be taken to assess for spoilage (changes in color and odor) prior to serving. Any uneaten portion of food should be promptly removed within 30 minutes and either stored in the refrigerator for use later the same day or discarded. If the food is prepared in batches and stored in the refrigerator or freezer for future use, supplements should not be added to the batch but rather added to the food after warming but before serving. Heating the supplements can destroy essential nutrients.

Follow-Up and Monitoring

How often do I need to have my patient visit my veterinarian now that they are fed a home-cooked diet?

It is recommended that any pet fed a home-cooked diet be checked by a veterinarian at least every six months (animals with a concurrent medical condition may need to be seen more frequently as directed by your veterinarian). This visit should include an assessment of body condition, body weight, and physical examination and often tests such as blood work and urinalysis. It may also include specific diagnostic tests to determine how well the patient is responding to its medical and/or nutritional management.