



RIGHT ON CUE

Automated feeders work well for delivering small, frequent meals and are ideal for use in multicat households.

NUTRITION NOTES

Proactive Nutrition for the Healthy Indoor Cat

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Nutrition is the foundation of health and wellness for our feline patients. Nutrition is especially important for indoor cats, which depend solely on their owners for what, when, and how they eat. Indoor cats are at greater risk for becoming overweight or obese and for developing behavior problems. Although the reasons why cats are overweight/obese and/or have behavior issues are multifactorial, nutrition and feeding methods may play a prominent role.¹⁻³ Veterinarians can educate clients about feline nutrient requirements, diet types, and ideal feeding methods.

ADVANTAGES OF PROACTIVE NUTRITION

The authors believe that a proactive approach to prevent the indoor-only feline patient from becoming overweight or obese provides the best care and is quite rewarding. Early detection of weight gain and prevention of obesity are potentially easier than trying to achieve weight loss in an already overweight cat.

The condition of being overweight/obese constitutes a primary nutritional disease of cats. A 2018 clinical survey of veterinary healthcare professionals conducted by the Association for Pet Obesity Prevention found that up to 25.7% of cats were reportedly overweight

(body condition score [BCS] 6 to 7 on a 9-point scale) and that 33.8% of cats were reportedly obese (BCS 8 to 9). The survey did not identify lifestyles (i.e., exclusively indoor versus indoor/outdoor).⁴

Clients tend to look to their veterinarians for advice on optimum nutrition for their cats. In the Association for Pet Obesity Prevention survey of pet owners, 68% answered “Yes” to “Would you like your veterinarian to recommend a routine/maintenance diet for your pet?” yet 40% responded that they had received no dietary advice from their veterinary professional. Tips for advising clients about their cats’ nutrition are provided below and summarized in **BOX 1**.

TIPS FOR ENSURING PROACTIVE NUTRITION

Educate Clients About the Value of Proactive Nutrition

A key opportunity for discussing concerns about cats becoming overweight/obese is the time of spay or castration. These common surgical procedures are associated with potential weight gain, males more than females, especially those that are fed ad libitum.⁵⁻⁷ Neutering cats can lower energy requirements and



result in increased appetite.⁵⁻⁸ Lifestyle also affects caloric needs; indoor cats are at increased risk for becoming overweight/obese.⁹

The veterinary team can explain to clients that if their cat is overweight/obese, not only is that a primary disease associated with insulin resistance and a proinflammatory state, but it also poses increased risk for comorbidities.^{1-3,10,11} The team can also explain that an overweight or obese cat may experience reduced quality of life; a shorter lifespan; and increased risk for diabetes mellitus, constipation, orthopedic disease, urinary tract disease, hepatic lipidosis, and skin disease.^{1,10,12,13}

Show Clients How to Monitor Dietary Intake

Veterinarians can teach clients how to determine BCS and encourage them to weigh their cat to monitor and help determine appropriate dietary intake. Veterinarians can ensure that the diet is appropriate for the life stage of the cat (i.e., “growth” or “all life stages” for kittens and preferably “adult maintenance” for adult cats).

The timing of neutering presents a challenge for balancing the nutritional requirements of a growing kitten with the need to control food intake and avoid excessive weight gain. Although determining BCS is not specifically validated for growing kittens, most nutritionists still recommend and apply BCS values as a convenient in-clinic tool for estimating ideal condition in kittens. Portion-controlled feeding is recommended, as is regular monitoring of body weight and BCS to enable adequate and timely adjustment of the amounts fed.

BOX 1 Ensuring Proactive Nutrition

- Educate clients about the value of proactive nutrition
- Show clients how to monitor dietary intake
- Describe cats’ natural feeding behavior
- Recommend automated feeders
- Prevent the finicky feline
- Recommend diets for healthy kittens and adult cats

To proactively prevent weight gain in adult cats and kittens, veterinarians can emphasize the value of tracking total daily intake by weighing food on a gram scale. The authors recommend using a gram scale to weigh the exact amount fed each day and then using the caloric density of the diet to determine the exact caloric intake. Using the daily intake along with reassessing the cat’s body weight and body and muscle condition scores will allow for adjustments in daily caloric intake and will help prevent the cat from becoming overweight/obese. This information along with client/veterinarian BCS assessments and body weight trends can enable adjustment of food/caloric intake to maintain proper growth. It also proactively allows the client and the veterinary team to adjust intake as needed to maintain optimal body weight and body condition score of the indoor-only adult cat.

Describe Cats’ Natural Feeding Behavior

A proactive approach is educating clients about a cat’s predatory behavior and how it can be used to develop the best feeding methods, especially for indoor cats. For cats, hunting is instinctive, and this predatory behavior is not eliminated simply by having owner-provided food. The cat’s natural feeding behavior is to consume 8 to 16 meals a day.^{14,15} It is unknown how infrequent feeding (i.e., twice a day) affects long-term health, but one study in a laboratory colony of male cats demonstrated decreased food intake, decreased water intake, and less urine production when the cats were fed 2 meals a day compared with ad libitum.¹⁶ Cats naturally work for their food by hunting; one-third of their hunts lead to a successful kill. In fact, for cats, hunting is so instinctive that they will continue to hunt before consuming a recent kill, and hunger is not necessary for cats to hunt.^{14,15}

Veterinarians should recommend feeding methods for cats that provide an outlet for natural behaviors, are mentally stimulating, and provide environmental enrichment, such as foraging toys, feeding puzzles, and simulated hunting.^{17,18} Although hunting is instinctive, it has been reported that hunger can increase hunting (or play).^{19,20} Feeding methods that simulate multiple hunting activities include offering small, frequent meals.

The benefits of using a feeding method that mimics the cat’s instinctive predatory behavior should be emphasized, due to a recent survey reporting that only 30% of owners used food puzzles (and only

occasionally) and another 18% had tried them but no longer used them.²¹ Furthermore, studies indicate that 40% to 60% of cats are free-fed or fed twice daily; free feeding is more common among obese cats.²²⁻²⁴ In 2013, the American Association of Feline Practitioners and the International Society of Feline Medicine published their Feline Environmental Needs Guidelines, which recommended the use of food puzzles for environmental enrichment and feline wellbeing.²⁵ Dantas et al. provide detailed information for veterinarians on how to discuss using food puzzles and an example handout for veterinary clients.¹⁷ To further educate clients about proper feeding methods for cats, direct them to foodpuzzlesforcats.com.

Recommend Automated Feeders

Proactive nutrition can include automated feeders, which work well for delivering small, frequent meals and are ideal for use in multicat households. When cats solicit food from their owners, certain behaviors may become associated with feeding time (e.g., purring, meowing, pacing, increased activity) and be reinforced.²⁶⁻²⁸ Cats can become overly demanding, and automated feeders can be used to reduce the connection between the human and the arrival of food.

Although meal feeding may increase the cat/owner bond, instead of focusing their relationship on meals, owners can be encouraged to groom their cats or play with them to promote healthy exercise. Automated feeding can also help reduce cats' nighttime activity, which is a common cat-owner complaint.¹⁸ Adding automated feeders and/or food puzzles will ensure small frequent meals and allow for nighttime meals or meals when the owner is not home.

Cats prefer their food warm or at room temperature; therefore, feeding small multiple meals may be more challenging. Some automated feeders have cold packs to keep canned food fresh. Small amounts of canned food can be frozen and then set out to deliver a meal that the cat can consume when it is at the preferred temperature. Because cats are solitary hunters and prefer to consume their meals alone in a quiet area, in multicat households these small meals and automated feeders should be spaced out sufficiently in quiet areas to prevent stress and competition for food.

Prevent the Finicky Feline

Proactive nutrition includes addressing the fact that cats tend to fixate on one type of food or flavor if fed a

TABLE 1 Examples of High-Protein, Low-Carbohydrate Veterinary Therapeutic Diets

DIET	% PROTEIN DMB	% FAT DMB	% CHO DMB	KCAL/GRAM AS FED	AAFCO STATEMENT LIFE STAGE(S)
CANNED					
Purina Pro Plan Veterinary Diets DM Regular*	57	24	7	1.1	Adult Maintenance
Hill's Prescription Diet m/d GlucoSupport Wet†	52	25	13	1.1	Adult Maintenance
Purina Pro Plan Veterinary Diets CN*	41	38	13	1.4	Adult Maintenance
Purina Pro Plan Veterinary Diets EN Regular*	48	22	20	1	Adult Maintenance and Kitten Growth
Blue Natural Veterinary Diet GI Gastrointestinal Support‡	49	29	9	1.2	Adult Maintenance and Kitten Growth
Blue Natural Veterinary Diet NP Novel Protein – Alligator‡	39	40	10	1.3	Adult Maintenance
Blue Natural Veterinary Diet W+U Weight Management + Urinary Care‡	43	20	13	0.9	Adult Maintenance
DRY					
Purina Pro Plan Veterinary Diets DM Regular*	57	18	17	4.2	Adult Maintenance
Hill's Prescription Diet m/d GlucoSupport†	53	22	15	4	Adult Maintenance
Purina Pro Plan Veterinary Diets EN Regular*	55	18	18	4.2	Adult Maintenance and Kitten Growth

AAFCO=Association of American Feed Control Officials; CHO=carbohydrate; DMB=dry matter basis.

*Purina ProPlan Veterinary Diets 2020 Product Guide.

†Hill's Key to Nutrition 2021 Product Guide.

‡Blue Natural Veterinary Diet 2019 Product Guide.



single diet for a long period of time.²⁹ Early exposure to a variety of foods will help prevent this behavior. When healthy cats are raised with a variety of food types and flavors, they are usually neophilic, meaning they are willing to try new foods and/or flavors. When cats are stressed (i.e., in a strange environment or unhealthy), they can be neophobic, meaning they avoid any new flavors or food. Telling clients how to prevent their cats from becoming obsessed with only 1 food type and flavor may allow for diet changes, should they be needed in the future. Getting cats to accept new and different foods that can then be rotated is best done with young cats, but clients can still be encouraged to try it with adults and even older cats. Have owners try offering new foods in small quantities alongside the previously accepted food and then rotate the different accepted foods. If gastrointestinal upset is a concern, you might recommend extending the transition over days or weeks.³⁰⁻³²

Recommend Diets for Healthy Kittens and Adult Cats

Inform clients that cats are obligate carnivores, which means that unlike noncarnivorous species, cats have a unique need for higher amounts of protein to provide dispensable nitrogen. Cats do not require carbohydrates, and little carbohydrate is contained in the natural feline diet of small mammals, birds, and insects. However, despite the lack of glucokinase (a liver enzyme that affects glucose metabolism) and lower levels of enzymes to digest carbohydrates, cats can indeed utilize dietary carbohydrates.³⁰ **BOX 2** describes a sample proactive nutrition plan.

Studies indicate that predator cats will derive 52% to 62% of their calories from protein, 25% to 46% from fat, and only 2% to 12% from carbohydrate.³³⁻³⁵ The most common prey for today's domesticated cat and its ancestors is the mouse, which provides about 30 kcal/mouse. Nutrient analysis indicates that a mouse comprises (on a dry matter basis) 63% protein, 12% fat, 13% carbohydrate or nitrogen-free extract, and 12% ash (minerals).³⁵ When domesticated cats select diets, they prefer a nutrient profile with 50% protein, 40% fat, and 10% carbohydrate on a dry matter basis with 33% of metabolizable energy from protein, 62% to 63% from fat, and 1.3% to 7% from carbohydrates.³⁶⁻³⁸ A recent study reported that feeding a high-protein, grain-free diet reduced the number of animals captured and brought home by predator cats by 35%.³⁹

BOX 2 Sample Proactive Nutrition Plan

For a 1.5-year-old female spayed, healthy indoor cat with a body weight of 4.5 kg, BCS 5/9, normal muscling:

- Calculate resting energy requirement (RER):
(4.5 kg)^{0.75} = 3.1 × 70 = 218 kcal
- Calculate daily energy requirement: 218 kcal × 1.2 (maintenance energy factor) = 261 kcal/day
- Instruct clients to feed 50 grams of a veterinary therapeutic diet (VTD) twice a day (1 kcal/gram; 100 kcal from can)
 - 261 kcal - 100 kcal from VTD can = 161 kcal as VTD dry food (4.2 kcal/gram)
 - 161 kcal ÷ 4.2 kcal/gram = 38 grams of dry food
- Put 6 grams in a 5-serving automated feeder (total 30 grams) once a day
- Put 4 grams in 2 food puzzle or foraging toys (8 grams) once a day
- Record body weight and body condition score at home once a week
- Recheck in 1 month to determine if diet (rotate) and/or feeding plan needs adjustment

Other studies indicate that cats can digest and utilize carbohydrates.⁴⁰⁻⁴⁵ In one study, cats were fed a decreasing amount of protein (50% down to 7.5% of metabolizable energy) in exchange for increasing carbohydrate (11% to 57% of metabolizable energy). More protein was metabolized when cats were fed the higher protein, whereas more carbohydrate was metabolized when they were fed the high-carbohydrate diet. If minimal protein needs were met, cats were able to adapt their metabolism according to the source of energy consumed.⁴¹ Although the literature does not clearly define “optimal” amounts of protein, fat, and carbohydrate in diets for cats, it is well established that excess caloric intake contributes to indoor cats becoming overweight/obese.

The authors prefer to recommend healthy kitten and cat diets that are high in protein and low in carbohydrate. Because veterinary therapeutic diets (VTD) provide accessible nutrient profiles in kcal/kg, selecting and recommending an appropriate VTD can help ensure exact kcal intake for optimal weight management for the healthy indoor cat (**TABLE 1**).

For over-the-counter (OTC) cat diets, canned foods tend to be lower in carbohydrate content than dry

**TABLE 2 Canned and Dry Food Nutrient Comparison⁴⁰**

DRY MATTER BASIS, %					
DIET	PROTEIN	FAT	CRUDE FIBER	ASH	CARBOHYDRATE
Canned	46.7	20.9	5.6	10.8	16
Dry	36.4	17.4	4.4	7.3	34.7

foods. The pet food labels guaranteed analysis is listed as maximum and minimum (depending on nutrient) and on an as-fed basis, which may not reflect the true amount of each nutrient. Furthermore, for a comparison of OTC dry and canned diets, the guaranteed analysis needs to be recalculated to a dry matter basis. A review of OTC diets in the United States (TABLE 2) used the guaranteed analysis, which may not be the exact nutrient content, and because carbohydrates are determined by a mathematical calculation, these values can be considered an overview and/or approximation.⁴⁰

SUMMARY

The primary disease state of being overweight or obese, which affects up to 60% of cats, is preventable. Veterinarians can invest in and embrace the concept of proactive nutrition to educate clients about feline nutrition, predatory behavior, and feeding behavior. These discussions can be used to recommend appropriate diets and feeding plans to prevent this disease and its consequences. Recommending that clients weigh daily food portions and monitor the cat's BCS and body weight will help them maintain a healthy weight for their indoor cats. Preventing cats from becoming overweight or obese can be more rewarding and successful than weight-loss programs. **TVP**

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DERMATOLOGIC SOLUTION**CAUTION:**

Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

DESCRIPTION:

Dermatologic Solution TRESADERM® (thiabendazole, dexamethasone, neomycin sulfate solution) contains the following active ingredients per mL: 40 mg thiabendazole, 1 mg dexamethasone, 3.2 mg neomycin (from neomycin sulfate). Inactive ingredients: glycerin, propylene glycol, purified water, hypophosphorous acid, calcium hypophosphite, about 8.5% ethyl alcohol and about 0.5% benzyl alcohol.

INDICATIONS:

Dermatologic Solution TRESADERM is indicated as an aid in the treatment of certain bacterial, mycotic, and inflammatory dermatoses and otitis externa in dogs and cats. Both acute and chronic forms of these skin disorders respond to treatment with TRESADERM. Many forms of dermatosis are caused by bacteria (chiefly *Staphylococcus aureus*, *Proteus vulgaris* and *Pseudomonas aeruginosa*). Moreover, these organisms often act as opportunistic or concurrent pathogens that may complicate already established mycotic skin disorders, or otocariasis caused by *Otodectes cynotis*. The principal etiologic agents of dermatomycoses in dogs and cats are species of the genera *Micosporum* and *Trichophyton*. The efficacy of neomycin as an antibacterial agent, with activity against both gram-negative and gram-positive pathogens, is well documented. Detailed studies in various laboratories have verified the significant activity thiabendazole displays against the important dermatophytes. Dexamethasone, a synthetic adrenocorticoid steroid, inhibits the reaction of connective tissue to injury and suppresses the classic inflammatory manifestations of skin disease. The formulation for TRESADERM combines these several activities in a complementary form for control of the discomfort and direct treatment of dermatitis and otitis externa produced by the above-mentioned infectious agents.

DOSAGE AND ADMINISTRATION:

Prior to the administration of Dermatologic Solution TRESADERM, remove the ceruminous, purulent or foreign materials from the ear canal, as well as the crust which may be associated with dermatoses affecting other parts of the body. The design of the container nozzle safely allows partial insertion into the ear canal for ease of administration. The amount to apply and the frequency of treatment are dependent upon the severity and extent of the lesions. Five to 15 drops should be instilled in the ear twice daily. In treating dermatoses affecting other than the ear the surface of the lesions should be well moistened (2 to 4 drops per square inch) with Dermatologic Solution TRESADERM twice daily. The volume required will be dependent upon the size of the lesion.

Application of TRESADERM should be limited to a period of not longer than one week.

PRECAUTIONS:

On rare occasions dogs may be sensitive to neomycin. In these animals, application of the drug will result in erythema of the treated area, which may last 24 to 48 hours. Also, evidence of transient discomfort has been noted in some dogs when the drug was applied to fissured or denuded areas. The expression of pain may last 2 to 5 minutes. Application of Dermatologic Solution TRESADERM should be limited to periods not longer than one week.

While systemic side effects are not likely with topically applied corticosteroids, such a possibility should be considered if use of the solution is extensive and prolonged. If signs of salt and water retention or potassium excretion are noticed (increased thirst, weakness, lethargy, oliguria, gastrointestinal disturbances or tachycardia), treatment should be discontinued and appropriate measures taken to correct the electrolyte and fluid imbalance.

Store in a refrigerator 36 - 46°F (2 - 8°C).

WARNING:

For topical use in dogs and cats. Avoid contact with eyes.

Keep this and all drugs out of the reach of children.

The Safety Data Sheet (SDS) contains more detailed occupational safety information. To report suspected adverse drug events, for technical assistance, or to obtain a copy of the Safety Data Sheet (SDS), contact Boehringer Ingelheim Animal Health USA Inc. at 1-888-637-4251. For additional information about adverse drug experience reporting for animal drugs, contact FDA at 1-888-FDA-VETS, or online at <http://www.fda.gov/reportanimalae>.

HOW SUPPLIED:

Products 55871754 & 55871152 - Dermatologic Solution TRESADERM Veterinary is supplied in 7.5 mL and 15 mL dropper bottles, each in 12 bottle boxes.

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