2014 AAHA Weight Management Guidelines for Dogs and Cats*†

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ABSTRACT

Communicating and implementing a weight management program for dogs and cats can be a challenging endeavor for veterinarians, but a rewarding one. An effective individualized weight loss program provides a consistent and healthy rate of weight loss to reduce risk of disease, prevent malnutrition, and improve quality of life. Weight loss is achieved with appropriate caloric restriction, diet selection, exercise, and strategies to help modify behavior of both the pet and client. This document offers guidelines and tools for the management of weight loss and long-term maintenance of healthy weight. (*J Am Anim Hosp Assoc* 2014; 50:1–11. DOI 10.5326/JAAHA-MS-6331)

Introduction

Up to 59% of dogs and cats are overweight, making this the most common nutritional disorder identified in veterinary practice.[1–3,4] Excess weight can reduce longevity and adversely affect quality of life.[5–7] The hormones and inflammatory cytokines released by excess adipose tissue lead to a state of chronic inflammation, the impact of which is not completely understood at this time.[8,9] Excess weight is associated with skin and respiratory disorders, renal dysfunction, and it increases the risk of metabolic and endocrine disorders (e.g., diabetes), orthopedic disease, and some types of cancer.[7,10–19]

Weight management, including obesity prevention and treatment, remains a challenge for veterinarians and clients alike. Among clients with dogs defined as "overweight" by the veterinarian, one study showed that 39% of the clients thought that their dogs were at an acceptable weight.[20] Those clients are unlikely to be aware of the negative impact excess weight has on their pets' health. Additionally, some veterinarians struggle to find a tactful and effective way to discuss the impact of obesity and importance of weight loss.

The goals of these guidelines for dogs and cats are to raise awareness of the negative health consequences of excess weight, promote the prevention of excess weight, and offer guidelines and tools for the management of weight loss and long-term maintenance of healthy weight. Although "weight management" may also include dogs and cats that are underweight due to lifestyle or medical causes, management of such cases can be complex and is beyond the scope of this document.

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AAFCO *American Association of Feed Control Officials;* BCS *body condition score;* BF *body fat;* BW *body weight;* MCS *muscle condition score;* RER *resting energy requirement;* OTC *over-the-counter*

*The authors specifically requested that they not be told the identity of the sponsors until the document was completed.

†These guidelines were developed by a panel of experts to help the practicing veterinarian raise awareness of the negative health consequences of excess weight, promote the prevention of excess weight, and offer suggestions and tools for the management of weight loss and long-term maintenance of healthy weight. This document is intended as a guideline only. Evidence-based support for specific recommendations is cited whenever possible and appropriate. These guidelines were sponsored by a generous educational grant from Hill's Pet Nutrition and Zoetis.

An effective individualized weight loss program provides a consistent and healthy rate of weight loss to reduce risk of disease, prevent malnutrition, and improve quality of life. Weight loss is achieved with appropriate caloric restriction, diet selection, exercise, and strategies to help modify the behavior of both the pet and client. The success of any program depends on partnering with clients to set expectations, promote client compliance and treatment adherence (compliance and adherence describe the degree to which the client correctly implements medical advice and continues an agreed-on mode of treatment), and overcome challenges presented by each pet.

Prevention

Because of the high prevalence of overweight pets and the health risks associated with excess body fat (BF), prevention efforts used by the entire veterinary team may positively impact pet health. The most appropriate time for weight management and intervention is prior to weight gain and the subsequent development of clinical disease. Maintenance of a healthy weight should begin with the first veterinary visit including recommendations for the following:

- Puppy and kitten feeding
- Evaluating body condition score (BCS) and how to adjust feeding when BCS changes are noted at home, particularly after either spaying or neutering[21]
- Maintaining an ideal adult weight
- Maintaining exercise and activity
- Behavior training using interactive rewards as alternatives to food
- Educating clients about the limitations of pet food labels and label feeding recommendations

Monitor weight trends and proactively address weight gain early at any BCS above the ideal. Adverse subclinical consequences such as low-grade chronic inflammation are the most difficult to perceive as a health issue, yet before clinical signs are evident is the most appropriate time for medical intervention.

Puppies and kittens must consume food that meets their requirements for growth to ensure adequate intake of critical nutrients, such as protein, calcium, and phosphorus, until they have completed skeletal growth.[22] Instruct clients to monitor puppies' and kittens' BCS *q* 2 wk. At the time of either spaying or neutering, there may be an increase in the pet's appetite but a decrease in its caloric needs.[23–25] There should be nutritional assessment at regular intervals postgonadectomy. If the growing pet has a BCS higher than ideal, switch to a lower calorie puppy or kitten food, eliminate other sources of calories, and emphasize exercise and environmental enrichment. Either changing to an adult food or weight-loss food before skeletal maturity is complete is not recommended as that may not meet nutritional requirements for growth.

Seasonal changes may affect both activity and appetite.[26] Temperature extremes often limit outdoor activities and decrease daily caloric expenditure. Educate clients about diet and feeding management adjustments that are necessary when energy expenditure changes to avoid repeated cycles of weight gain and weight loss.

Weight monitoring and prevention of weight gain is particularly important for dogs prone to obesity (e.g., Newfoundlands, dachshunds, cocker spaniels, or any dog with low energy expenditure) and cats housed mostly indoors with minimal activity.[4,27–29]

Aging also affects metabolic rate and activity level.[30–32] Nutritional reassessment at yearly exams will help to identify and address weight gain as pets age. The greatest prevalence of obesity has been identified in dogs and cats between the ages of 5 yr and 12 yr, so that age group may benefit from increased vigilance and perhaps a diet change to a less calorie-dense food.

Initial Assessment

Begin by assessing the patient, the environment, and obtaining a full diet history as detailed in the American Animal Hospital Association Nutritional Assessment Guidelines.[21] Identify all household and environmental factors that impact feeding management (i.e., current diet, feeding schedule, treats, numbers and perceptions of household members involved with feeding), exercise (current and potential), and the environment (housing, environmental enrichment).[21]

Assess the Patient

In addition to a complete physical exam, the patient health assessment may include relevant laboratory and imaging studies as appropriate to assess for comorbidities that may impact either caloric needs or require additional management (e.g., exercise-limiting orthopedic disease, metabolic/endocrine disorders).

Evaluate the pet's current body weight (BW), BCS, and muscle condition score (MCS) as part of the health assessment and for determining healthy weight.[21,33] Assessing the MCS along with the BCS will establish a baseline from which you may monitor muscle and fat loss, especially if there is either a comorbid condition (where either the weight loss rate may be lower or the patient is at risk for loss of muscle mass due to the catabolic impact of disease) or the patient is losing weight too rapidly (resulting in loss of muscle mass).

Estimating the pet's ideal weight helps determine the pet's caloric requirements and establishes a motivating goal. Some ways to estimate a patient's ideal weight include the following:

1. Historical. Check the medical record for the pet's weight and BCS history to determine whether it shows a previous ideal weight that correlates to a BCS of 5 out of 9 or 3 out of 5.
2. Calculate the ideal weight from the current BCS if historical weight information is not available. Each BCS ≥ 5 (on a 9 point scale) or half of a BCS ≥ 3 (on a 5 point scale) is equivalent to being 10% overweight.[34–37] For example, a 45 kg Labrador retriever that has a BCS of 8 out of 9 is 30% overweight and its ideal weight is approximately 32 kg (**Table 1**).
3. Use the percent BF that correlates with the BCS scores to estimate ideal weight using the equation: [current BW $\times$ (100 − %BF)]/0.8.[37] Note that lean mass is 80% of the ideal BW, assuming 20% BF.

Although there is not an established criterion in veterinary medicine, for the purpose of this document, the authors define obese as a BCS of $\geq$ 8 out of 9 (or 5 out of 5). Although studies often do not differentiate overweight pets from obese pets, health risks and clinically apparent disease seem greater in severity as weight gain increases. Long-term studies of pets with various BCS categories against controls are needed to verify that clinical impression. All overweight pets suffer from similar, yet less obvious morbidities, and should be treated with as much urgency for weight loss as obese pets.[7]

It is challenging to accurately determine ideal BW in obese patients that exceed the BCS scale (i.e., >5 out of 5 or >9 out of 9, correlating to being $>40\%$ overweight). There is no proven method for adjusting the calculation for severely obese patients, and the above approach may cause an overestimate of the ideal weight. Reassessing the patient as their BCS improves during weight loss allows refinement and more accurate estimate of the patient's ideal weight.

TABLE 1

Summary of BCS Scales and Their Relationship with BF and BW[36,68–71]

9 point scale	5 point scale	% BF*	% Overweight
4	2.5	15–19	Ideal
5	3	20–24	
6	3.5	25–29	10%
7	4	30–34	20%
8	4.5	35–39	30%
9	5	40–45+	40%
>9	>5		>40%

*Current body weight $\times$ (100 − % BF)/0.8. Lean mass is 80% of ideal weight (assuming 20% BF).
BCS, body condition score; BF, body fat; BW, body weight.

Assess the Client and Feeding Management

Success for weight loss depends on the client's willingness, interest, and ability to follow recommendations (i.e., adherence). Assess the client's readiness to change his/her feeding habits and evaluate opportunities for changing the pet's management and lifestyle.[38] Identify challenges the client has faced in the past with feeding management to effectively tailor the plan to the patient and engage the entire household.

Assess the Current Diet

The diet history can provide valuable information about current caloric intake that can serve as a starting point for the weight loss program and help the veterinarian anticipate potential challenges to the weight loss plan (discussed in detail below). Collect information about total daily intake (i.e., varieties and amounts of foods, treats, chews, and supplements; feeding management; and any use of food to administer medication), with sufficient detail to account for all calories ingested. Anticipate nutritional imbalances when treats and human foods exceed 10% of the total caloric intake.[21]

Evaluate how food plays a role in the client relationship with the pet, such as food used for training, nurturing, or bonding in specific situations. Assess "nonnegotiables" lifestyle aspects that the client seems either unlikely or unable to change and try to incorporate some aspect of those aspects into the plan. Such compromises can help increase adherence and trust moving forward with the weight loss program.

Designing a Weight Loss Program

Overall Approach

After the initial assessment is complete, formulate an individualized weight loss plan. The plan should include the determination of the following:

1. Ideal BW
2. Caloric restriction
3. Food selection and treat allowance(s)
4. Feeding management and activity plans
5. Scheduled follow-up

Determine Daily Caloric Intake

The approach to determining the daily caloric goal for weight loss depends on the presentation and history of the patient.[39] Any method of caloric restriction is merely a starting point and subject to individual metabolism. Regular monitoring is essential to ensure healthy weight loss and allow for necessary adjustments in caloric intake. Two options for determining the daily caloric requirements for weight loss are the following:

1. Feed an amount to provide 80% of the current caloric intake. That approach may be effective in patients that are overweight and are at a stable weight with an accurate diet history. However, if a pet is actively gaining weight, a greater reduction may be required to promote effective weight loss.
2. Calculate the resting energy requirement (RER) using the pet's estimated ideal weight then feed a percentage of that amount. Although there is no established standard reduction, feeding 80% of ideal-weight RER is effective and well tolerated.[40,41] Calculate the daily RER for ideal BW in kg using one of the following two equations. Note that the first equation can be used for patients of any weight. The second equation is used for patients weighing 2–25 kg, but note that the second equation is not as accurate as the first equation as it will overestimate the caloric needs of patients weighing either <2 kg or >25 kg.

$$\text{RER in kcal/day} = 70 \times (\text{ideal BW [kg]})^{0.75}$$

$$\text{RER in kcal/day} = 30 \times (\text{ideal BW [kg]}) + 70$$

Select a Diet

Select a diet based on the caloric restriction desired, the degree of obesity, and the preferences of the patient and client. Inquire about preferences regarding flavor and dry versus canned foods. Evaluate and prepare a list of diet options that vary within those parameters if the first or second choice does not meet with acceptance from the client or pet. Determine availability and affordability concerns that might influence diet selection.

Before starting a plan, make sure that everyone involved in the pet's care is interested and receptive, ensuring that the plan is practical and feasible for the client's abilities and lifestyle. Then calculate the daily food dose and translate that dose into quantities of cans and/or cups/day. If possible, weigh dry food on a scale because measuring with a cup may be imprecise, particularly with the small amounts needed for cats and small dogs (calculate the food dose using the kcal/kg obtained from either the pet food label or the manufacturer).[42] Incorporate a treat allowance of up to 10% of total calories into the daily caloric goal. Explore, address, and realign client expectations if necessary.

Essential nutrients in pet foods are balanced according to caloric content, so when portion size (and thus calories) is reduced, so are the amounts of essential nutrients. A review of the process for a comprehensive analysis of nutritional adequacy of a diet is beyond the scope of these guidelines; however, evaluating a diet for sufficient protein is an important step for weight loss plans.

Consider dietary protein on an energy basis (in g/1,000 kcal) to evaluate the impact of the proposed reduction of caloric intake on National Research Council recommended allowances (**Table 2**) For a quick rule of thumb to ensure that the diet contains adequate protein, select foods that provide cats with ≥ 5 g/kg BW and dogs with ≥ 2.5 g/kg BW based on ideal BW (See Evaluating Protein Sufficiency sidebar.).[43–45]

A therapeutic food is defined as a pet food that was purpose formulated to help modulate either a disease or condition. Therapeutic foods are only available either through a veterinary office or with a prescription from a veterinarian. Using a therapeutic weight-loss diet is preferred over using reduced amounts of over-the-counter (OTC) diets because therapeutic diets are more likely to provide adequate nutrient intake when fed in calorically restricted amounts.

Therapeutic weight loss diets are formulated to contain more protein, vitamins, and minerals/calorie than OTC foods, ensuring adequate nutrient intake during caloric restriction. High protein may preserve muscle mass during weight loss and may improve satiety.[46,47] As the effects of aging on protein digestibility are not well understood, senior pets may require closer monitoring of protein intake (and MCS) during weight loss.[48] Therapeutic foods also may be lower in fat, higher in fiber, and/or higher in moisture to decrease caloric density. That allows clients to feed a greater volume of food with fewer calories.

The role of fiber in satiety for dogs and cats is controversial and likely varies among pets.[46,49–51] The crude fiber analysis, which is required on a pet food label, accounts for only the insoluble fiber fraction and none of the soluble fiber content and is an underestimate of the true fiber content of most pet foods. Diets

TABLE 2

Minimum Protein Requirements in Diets[72]

NRC recommended allowances for protein/kg of ideal BW per day		Minimum protein needed in diet to meet NRC recommended allowances	
		When fed at 80% of RER for ideal BW	When fed at 60% of RER for ideal BW
Cat	4.96 g protein/BW $(kg)^{0.67}$	89 g/1,000 kcal	104 g/1,000 kcal
Dog	3.28 g protein/BW $(kg)^{0.75}$	60 g/1,000 kcal	79 g/1,000 kcal

BW, body weight; NRC, National Research Council; RER, resting energy requirement.

Evaluating Protein Sufficiency Using RERs and BW[67,68]

Because labels do not show protein content in g per 1,000 kcal, the g of protein being fed can be calculated using the "guaranteed analysis" and the following information:

Assume an overweight dog with 10 kg ideal body weight. Assume your food label shows 21% crude protein and contains 3,490 kcal/kg.

1. Calculate dog's caloric needs at 80% resting energy requirements (see text), use the following equation:

$$80\%\left(70\times 10\ \text{kg}^{0.75}\right)=315\ \text{kcal/day}$$

2. Calculate g of protein in the food using the following equation:

$$(\%\ \text{crude protein/kcal/kg})\times 10{,}000=\text{g/1,000 kcal of food}$$

$$21/3{,}490\ \text{kcal/kg}\times 10{,}000=60\ \text{g/1,000 kcal}$$

3. Determine dog's daily protein requirement using the following equation:

$$\geq 5\ \text{g/kg for cats and} \geq 2.5\text{g/kg for dogs}$$

$$2.5\ \text{g/kg}\times 10\ \text{kg BW}=25\ \text{g protein/day}$$

4. Determine whether the food provides sufficient protein to meet canine pet's needs using the following:

$$315\ \text{kcal/day}\times 60\ \text{g/1,000 kcal}=18.9\ \text{g/day}$$

$$18\ \text{g}<25\ \text{g}$$

This food does not provide sufficient protein.

containing insoluble fiber purportedly have a lower caloric content by volume and may promote satiety, leading to better diet plan adherence.[46] Insoluble fiber may cause an increase in the volume and frequency of bowel movements.[52] Discuss that potential effect of fiber with clients when selecting a diet.

Restricting the amount of OTC maintenance food that is fed, especially diets with high caloric density, generally fails to provide satiety for most pets, contributing to poor adherence and client frustration. Restricting amounts of an OTC maintenance diet fed could also lead to deficiency of one or more essential nutrients.[53]

The current median kcal/cup of therapeutic and OTC dry foods marketed for weight management are 301 kcal/cup (dogs) and 342 kcal/cup (cats).[54] However, there is wide variation and there are no nutritional or caloric criteria mandated for the terms such as "less active," "indoor," "weight control," "optimal weight," or "healthy weight." Products labeled "less" or "reduced" calories or fat have no restriction on calorie or fat content other than being some amount lower than the company's chosen comparison product. Foods with labels stating "lite" or "light" must contain less than a certain amount of calories/kg set by the American Association of Feed Control Officials (AAFCO), although there is no restriction on calories/cup or can.[22] For specific definitions and amounts that qualify as "light," see the AAFCO 2013 Official Publication.[22] Due to the wide variability of products with such labeling, achievement of weight loss requires careful evaluation of those products on a case-by-case basis.

When advising clients about amounts to feed, it is best to do so based on a caloric target, not just a variation on the label range. Pet foods that show similar caloric content/cup or content/can may show entirely different recommendations about the amount to feed. Compare the caloric density, not the label feeding amounts, to determine caloric intake.

In some instances it may be appropriate to adjust volume alone and not change to a therapeutic diet if the pet can lose weight with modest caloric restriction and without feeding below the label guidelines to provide calories for ideal weight. That process will ensure the pet receives adequate nutrients. For example, that approach may apply to either cats being transitioned to meals from free feeding or to pets just slightly overweight and easily able to increase activity.

There is little to no evidence showing that any nutritional supplement aids in weight loss.[55] There is one FDA-approved pharmaceutical[a] that is currently available for the management of obesity in dogs. That medication was evaluated in a safety and efficacy study up to 1 yr's duration when used with a maintenance diet.[56] As with any medication, it may not be appropriate for every patient.

Exercise/Activity

Research in humans has shown that combining caloric reduction with exercise offers the best chance of successful and sustainable weight loss.[57,58] Physical activity provides several potential benefits including preservation of lean muscle mass, increased caloric expenditure, and promotion of behaviors that aid in sustainable weight loss.[59] Although evidence that exercise will enhance weight loss outcomes in pets is preliminary, data from humans suggests that increased activity could have a positive impact on weight loss in pets.[40,60]

Physical activity differs between dogs and cats. Assess and discuss with the client any pet and/or client physical limitations, client schedule, expectations and goals, possibilities, and limitations (e.g., pet sitter/daycare availability, activity options, adverse weather conditions).

Assess any comorbidities that may affect tolerance and timing of implementation of a physical activity program. Once a patient is deemed healthy enough to undergo an exercise program, design a plan based on endurance, intensity, and type of exercise. For pets with limited mobility, consider either low-impact exercise alternatives (such as swimming) or consultation with a rehabilitation therapist.

Factors to consider when formulating a plan include who will be involved (e.g., client, veterinarian, rehabilitation therapist, referral) and documenting activity (i.e., time, intensity, caloric expenditure, etc.). Use that information along with weight change to adjust the feeding and/or exercise plan as needed.

Evidence is lacking to describe an ideal exercise program for dogs. With the exception of walking, caloric expenditures for various forms of exercise in pets is largely undocumented. One approach for an obese dog with no orthopedic restrictions is to start with a 5 min walk three times/day, if possible. Increase gradually until either the client's or pet's limit is reached or once a total of 30–45 min of walking/day has been achieved.[57]

In general, most dogs expend about 1.1 kcal/kg/km at a brisk walking pace of 10–10.5 min/km.[61,62] A 45 kg dog will burn about 240 calories after 4.82 km at that pace. Walking at a slower pace also has health benefits, although the benefits are difficult to quantify because of lack of current research. Use the above-described estimates to calculate suggested exercise by either duration or distance and incorporate that into the weight-loss plan. Without similar guidelines for other types of exercise, documentation of activity combined with more frequent weight monitoring may aid evaluation of other exercise protocols.

Introducing physical activity in cats can be challenging. Recommendations focus on environmental enrichment to encourage activity and modify behavior as summarized in **Table 3**. Hunting and stalking simulations may help motivate physical activity in cats. Sources of further enrichment ideas and activities are available and have been summarized in **Table 4**.[63]

Monitoring and Maintenance

Effective follow-up and regular monitoring by the entire veterinary team are critical components of a successful weight loss program. Consider some of the following points:

- Train the veterinary team to provide consistent information about diet and feeding for each life stage.
- Implement multimodal client reminder systems (e.g., postcards, phone calls, e-mails).
- Designate specific team members for client support and follow-up encouragement.
- Provide or recommend that clients participate in group programs (e.g., dog walking groups, agility clubs).

Once a program has been initiated, contact the client after the first week as many get discouraged with concerns such as food refusal and begging behaviors that are best addressed early on. Provide clinical support from team members via frequent phone calls between weight checks. Identify and address obstacles and client concerns, satisfaction, or frustrations with the program.

Follow up with the client either by telephone or an office visit *q* 2 wk until the desired rate of weight loss is established. Monitor the patient monthly until the ideal weight has been reached and has stabilized on a long-term maintenance program.

Suggested Follow-up Procedure

Consider some of the following suggestions when following up with the patient and clients:

- Ask open-ended questions to solicit client observations and concerns. Provide positive reinforcement.
- Record BW, MCS, and BCS. It may be useful to show the client measurements of either girth or abdominal circumference to emphasize losses.
- Take a picture of the patient. Create a chart to monitor and show progress.
- Calculate the rate of weight loss using the calculation:

$$\%\ \text{weight loss/wk} = (\text{amount of loss since last visit/weight at last visit} \times 100/\text{number of wk since last weight measurement})$$

  - The desired rate of weight loss in dogs is 1–2%/wk, and in cats is 0.5–2%/wk.
  - Modify the rate of weight loss in growing pets $<$ 1 yr of age (see previous comments about feeding for growth). Depending on patient age, the focus may be to slow weight gain rather than to cause weight loss.
  - Anticipate a possible slower rate of weight loss in patients with a comorbid condition (such as hyperadrenocorticism or hypothyroidism) either until or unless the primary disease is addressed.
- If MCS decreases, confirm adequate protein intake and evaluate the patient for either too-rapid weight loss or a comorbid condition that intensifies catabolism (e.g., diabetes, renal disease, hyperthyroidism), and adjust intake to reduce the rate of weight loss.
- If the desired weight loss is achieved, congratulate the client and identify the next target weight.

TABLE 3

Issues Impeding/Preventing Weight Loss and Possible Solutions

Issues	Possible solutions
Pet factors	
Looks hungry/begging	• Explain nutrient and calorie needs are met and that the begging is behavior, not nutritional or hunger-related. • Offer social or activity substitute (e.g., play, groom, walk, offer affection).[73] • Distribute a portion of the diet as treats instead of meals. • Divide food into more frequent, smaller meals. • Use food as salary the pet must earn. • Provide environmental enrichment. • Use food balls and food puzzles. • Place food to encourage exercise (e.g., cat tree/fetch). • Choose low-calorie treats (e.g., low-starch vegetables). • Remove pet from human feeding areas.
Misbehavior (trash raiding)	• Increase physical activity and environmental enrichment. • Partner with client in solution building; set realistic expectations.
Nocturnal vocalization	• Explain feline nocturnal feeding behavior.[74] • Change feeding management (night, later feeding, set automatic feeders for night). • Provide food toys/hidden food search.
Insufficient exercise	• Encourage social groups for clients to relate to each other and promote exercise (e.g., dog walking groups, online communities). • Explore possibilities for day care, pet sitter services, hiring neighbors or teens. • Suggest creative ways to exercise when hot/cold weather interferes.
Multipet household with food sharing/stealing	• Explore separate meal feeding options. • Change food for all pets if possible. • Offer food puzzles to slow down and separate feedings. • Separate pets based on their physical abilities or size differences (e.g., food box with small hole for small cat; cat food high up, not accessible to dogs). • Use products that restrict crate access based on a magnetic collar.
Pet doesn't accept new diet	• Provide food alternatives with different textures and moisture content. • Use treat allowance of up to 10% of the overall calories of the diet as a palatability enhancer. • Gradually introduce a new food over $\geq$ 1wk. • For cats, offer the new food side-by-side with the current diet, with gradual removal of the usual food. • Avoid offering alternatives if the pet skips a meal; however, do not allow cats to go longer than 24 hr without consuming any meals.
Weight loss plateau	• Inform clients that metabolic adaptations may result in slowing of weight loss and adjustment of the feeding plan will allow for weight loss to resume.[75,76] • Educate clients about necessary adjustments when energy expenditure changes to avoid repeated cycles of weight gain and weight loss. • Reassess exercise expenditure and recommend necessary changes. • Reassess/adjust caloric intake. • Consider water therapy/physical activity program, especially with pre-existing medical problems affecting exercise tolerance.
Client factors	
Client frustration and fatigue	• Extend recheck appointment length to allow greater support. • Identify and address specific frustrations. • Offer more frequent or intense coaching. • Be empathetic and nonjudgmental. • Acknowledge the difficulty of weight loss. • Encourage use of support groups.
Client resists new diet choice	• Discuss preferences of food type and find compromises that meet client needs. • Educate and inform client about food myths.
Client guilt	• Explain food-seeking behavior is often attention-seeking behavior. • Continue education about health benefits of weight management. • Explain that dogs develop stronger bonds with people who walk them than with those who provide food.
Nonadherent/noncompliant household members	• Offer methods to premeasure all food and treats for the day. • Identify specific impediments to adherence and offer specific solutions. • Consider multimodal methods (handouts, websites, e-mails, face-to-face meetings) for emphasizing the specific impact of excess BW on patient. • Engage entire family if nonadherence is suspected.

BW, body weight.

TABLE 4

Websites for Additional Information

Website	URL	Information on website
American Animal Hospital Association	www.aahanet.org https://www.aahanet.org/Library/GuidelinesTerms.aspx	Nutritional assessment guidelines; canine and feline life stage guidelines; nutritional assessment tools.
American Association of Feline Practitioners	www.catvets.com	Feline life stage guidelines; feline behavior guidelines; feline environmental needs guidelines; environmental enrichment tips.
American Veterinary Medical Association	https://ebusiness.avma.org/EBusiness50/ProductCatalog/ProductCategory.aspx?ID=132	Client brochures, including "Your Pet's Healthy Weight."
Association for Pet Obesity Prevention	www.PetObesityPrevention.org	Weight loss tools, pet food information.
Association of American Feed Control Officials (AAFCO)	http://www.petfood.aafco.org/LabelingLabeling Requirements.aspx http://www.petfood.aafco.org/Presentations.aspx	General information about pet food label regulations; pet food regulations label review checklist, including specific term definitions for weight management and calorie claims (see part IX, pages 169–200).
Catalyst Council	http://catalystcouncil.org/resources/health_welfare/	List of links and resources, including environmental enrichment and exercise ideas for vets and cat owners.
Indoor Pet Initiative	www.Indoorpet.osu.edu	Indoor pet initiative to increase environmental enrichment.
Partnership for Healthy Pets	http://www.partnersforhealthypets.org/practice_resources_overview.aspx	Practice resources and tools.
Pet Nutrition Alliance	http://www.petnutritionalliance.org/About_Us.aspx	Comprehensive nonbranded site providing tools and nutrition resources for health care professionals and clients.
Texas A & M University	http://www.vetmedicine.org/vetmednet/index.php?pageid=5013	Weight reduction calculator.
World Small Animal Veterinary Association	http://wsava.org/nutrition-toolkit	Nutrition toolkit; simple and extended diet history form template; pet food selection handout, including how to select a pet food.

- If weight loss is greater than the above-described desired rates, increase calories by 10% and monitor response.

Reassess if Weight Loss Is Insufficient

If the desired weight loss is less than the above-described desired rates, consider the following:

- Evaluate either adherence or other influences that may have tempered results and suggest alternatives.
- If adherence is verified and there is no evidence of risk, reduce calories by 10–20% and/or change activity recommendations and identify the next benchmark.
  - In the authors' experience, to achieve weight loss, most patients can tolerate caloric restriction as low as 60% of RER of ideal BW without adverse clinical signs.[64,65] Warn clients that that approach will likely differ from feeding instructions on the label.
  - More aggressive caloric restriction (< 60% RER) increases the risk of nutritional deficiencies and undesirable pet behavior that will test the client's commitment and adherence. Both commercial and therapeutic diets may lack adequate levels of essential nutrients at that level of caloric restriction. Cats may also have increased risk of hepatic lipidosis.
  - Consult with or refer to a board-certified veterinary nutritionist for clients with pets requiring < 60% RER to achieve weight loss.
- Schedule the next weight check or telephone follow-up.

Maintain Weight Loss Once Goals Are Achieved

Once the pet has reached its ideal BW, careful monitoring is essential to avoid weight regain. Some pets may have a propensity to quickly regain excess BW after a period of weight loss if healthy lifestyle habits are not continued.

Selection of a diet for BW maintenance is based on the pet's metabolic needs and client preferences, but during maintenance many pets still require relatively low caloric intake.[40] When faced with caloric restriction, some pets' metabolism may reset at a lower rate and, thus, they may require greater caloric restriction than expected after the ideal BW has been achieved.[66] Some pets may plateau at an ideal BW and require no change in intake from that used during the weight loss program for weight maintenance going forward.

If the patient is still losing weight once the ideal BW is achieved, increase caloric intake by 10% to change from weight loss to weight maintenance. Monitor *q* 2 wk until stable BW is achieved then monitor monthly to make sure ideal BW is being

maintained, making adjustments if necessary. It may take several monthly recheck exams to determine appropriate maintenance energy requirements.

Client Communication and Pet Behavior Modification

The process of managing and encouraging weight-loss programs can be challenging. Weight loss is seldom continually linear, which can frustrate pet owners and veterinary staff. Factors that affect programs are both pet- and client-related. Some common areas that challenge successful weight loss, and possible solutions, are shown in Table 3. Internet resources for tools and further information are listed in Table 4.

Conclusion

This article highlights the importance of weight management and is meant to aid in the implementation of successful weight management programs. The authors' intent is also to stimulate discussion about, and encourage further investigation into, weight management for pets. The prevalence of overweight dogs and cats is excessively high, and the authors would like these guidelines to serve as a call to action for small animal practitioners everywhere to give these patients the attention they merit.

There is a need for further research to develop more effective strategies for achieving successful weight loss in dogs and cats. Design of effective exercise programs is hampered due to lack of information on calories expended during many forms of exercise. It is the authors' hope that future research will aid the practitioner in the development of strategic exercise plans for dogs and cats.

Additionally, the authors feel strongly that the pet food industry must provide standardized and consumer-friendly nutrient profile information and clearer feeding guides on pet food labels to enable veterinary teams and consumers to make more informed diet and feeding management choices for pets. The new AAFCO requirement to show caloric content on pet food labels is not scheduled to be fully implemented until 2015.

The recent designation of obesity as a disease by the American Medical Association is compelling as it offers recognition of the serious and complex nature of the condition, but it may have unintended consequences. Although beyond the scope and mission of these guidelines, further discussion of that matter in veterinary medicine is warranted.

A successful weight management program will greatly improve the health of pets, reduce the potential for future health concerns, increase the level of activity of pets, and ultimately will improve the client/patient bond.

FOOTNOTES

[a] Dirlotapide; Zoetis, Florham Park, NJ

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