Obesity Management in Small Animal Practice
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Overweight and obese cats and dogs are encountered on a daily basis by most veterinarians. A complete weight loss assessment and plan may be difficult to complete in a short appointment window, therefore staff should be ready to efficiently gather needed information and make recommendations. Successful obesity management does not occur with only one appointment, but is dependent on good follow-up.

Obtaining an Accurate Diet History and Determining Calorie Intake
Diet history is important for determining the source and estimation of excess caloric intake. Veterinary professionals should question the owner about additional sources of kcals including treats, table foods, foods used for medication administration, and supplements. The Association of American Feed Control Officials added a new labeling requirement to its 2014 model feed regulations to include kcal content of pet foods and treats with 3 years to comply for existing products. The USDA nutrient database can be used to reference kcal content of most human foods.1 Determining caloric intake may also be useful in patients with low energy requirements to ensure new diet recommendations are below their current intake. Owners should also be questioned about food bowls and measuring devise. Owners can be advised to fill out a diet history form either before an appointment or after an appointment where overweight/obesity is identified. World Small Animal Veterinary Association provides a useful short diet history form for practitioners.2

Owner and Veterinarian Recognition of Obesity
In order for weight loss to be successful, owners must believe their pet is overweight or obese and that this has important health implications. In one study, 39% of owners with overweight/obese dogs underestimated their dog’s body condition score (BCS), while in another study 53% of owners agreed with the appropriate BCS, but 39% of these owners though their dog’s weight was acceptable.3,4 A normal BCS has been skewed for many pet owners. An evaluation of show dogs revealed that 18.6% and 1.1% of show dogs had a BCS > 5 and > 7/9 respectively, while 45.5% of show cats were > 5/9 and 4.5% > 7/9.5,6 Several clinical tools are available to aid in the discussion of overweight and obesity.7-10 BCS and Body Fat Index (BFI) are both validated scales associated with body fat % (BF%). The relationship between BCS and BF% is significant. Every increase in BCS is equivalent to a 5% increase in BF%. Cats and dogs are considered overweight when their BF% is >/= 25% and obese >/=35%. With a large number of animals >40% body fat, this may skew the perception of obesity for both the pet owner and veterinarian when assigning BCS. Using these tools in the exam room and inviting the owner to participate in the assessment of their animal is a useful way to help the owner recognize their pet’s body condition.

Determining Body Fat Percentage and Estimating Ideal Body Weight (IBW)
An essential part of weight management is establishing a goal or IBW. IBW can sometimes be determined from historical data. Equations are also available to estimate IBW using BF%:

- Current Body Weight x (100 – current body fat %)/(100 – ideal body fat %) = IBW

BF% can be estimated through the use of BCS, BFI, or morphometric measurements.9,10 Predictive equation can then be used to determine body fat mass, lean body mass (LBM), and BF%.11,12 BCS and BFI account only for body fat and not LBM.
Determining Energy Requirements for Weight Loss

To achieve successful weight loss in an otherwise healthy patient, the author advocates calculating the patient’s resting energy requirement (RER) based on their IBW:

- Exponential Equation: Resting Energy Requirement = (Body Weight$_{kgs}$)$^{0.75}$ x 70
- Linear Equation: RER = 30(Body Weight$_{kgs}$) + 70

A life stage factor for weight loss is then applied to determine the maintenance energy requirements (MER) as the initial kcal goal:

- RER x 1 = MER (dogs)
- RER x 0.8 = MER (cats)

The energy intake needed to achieve weight loss in dogs has been reported to range from 53-86 kcal/IBW$_{kg}^{75}$/day. The linear equation to calculate RER can be used for patients under 25kgs, but is not advised in patients with an IBW over 25kgs as it will over-estimate their kcal requirements. For animals that are consuming under their RER, recommend a reduction in kcal intake initially by 10-20%. The author does not advise restricting a dog or cat under 60% of their RER at their IBW for weight loss. If this type of kcal restriction is required, consider screening for underlying endocrine disease or consultation with a board-certified veterinary nutritionist. A more conservative method for animals with a known kcal consumption is to decrease caloric intake by 20%. Follow-up is necessary to tailor the pet’s weight loss plan following these initial estimates based on the patient’s individual energy requirements.

Choosing an Appropriate Weight Loss Diet

A therapeutic weight loss diet is recommended for obese animals. These diets are high in protein and micronutrients to maintain LBM and avoid nutrient deficiency with kcal restriction. These diets also contain high amounts of fiber to lower kcal density and promote satiety. Low carbohydrate (LC) therapeutic weight loss diets are often recommended for cats. These types of diets may have a metabolic advantage over high fiber (HF) diets, particularly in obese cats with insulin resistance and diabetes mellitus. Selection of diet should include consideration of the owner and patient preference (dry versus canned). Dry LC diets tend to be calorically dense when compared to HF therapeutic weight loss diets. Owner compliance may be easier with a larger food volume when a dry food is selected. Canned food for weight loss in cats is preferred by the author due to the potential for increased satiety and weight loss with a higher moisture content. Energy intake and body weight were significantly decreased in cats consuming a canned diet compared to the same diet with a low moisture content suggesting that high moisture foods may be of benefit over dry during weight loss. If canned food is selected, the author generally recommends a LC therapeutic formulation, although successful weight management can be achieved with both LC and HF diets. If dry food is preferred, the author typically recommends a high fiber, low calorie dense food. Using an 8-oz measuring cup is recommended although this may be imprecise. Over 12 studies, accuracy when measuring dry food ranged from an 18% under-estimate to 80% over-estimate. Weighing the food with a kitchen gram scale is more precise. This can be useful in small animals where there may be large kcal differences as cup size decreases or increases. Calorie information in kcal/kg should be available on the product label.

Treat Guidelines

Treats and table foods are often where weight loss plans fail. It is generally recommended that no more than 10% of total kcal intake should come from foods other than a complete and balanced diet. Some owners may request or need food items to administer medications. The author typically suggests melon balls (4-5kcal per ball) or mini marshmallows (2kcal per piece). Commercial treats may be given
as long as kcal content is identified. The use of a daily treat box or bag put together by one family member for the household has been a useful tool for many of the author’s clients to ensure they are not over-treating.

**Exercise Recommendations**

Exercise can build and preserve muscle mass and increase energy expenditure. Dogs undergoing weight loss with a physical training program 3 times per week and diet were able preserve LBM and lose similar amounts of weight compared to dogs with diet only. Active dogs undergoing weight loss have also been documented to eat more than inactive dogs while losing weight appropriately on a therapeutic weight loss diet. The intensity and duration of exercise recommendations should consider any owner or pet limitations. Consultation with a canine physical rehabilitation practitioner may be valuable for those patients with osteoarthritis or other orthopedic or neurologic disease to determine appropriate exercise regimens. Increasing exercise in cats takes a more creative approach than dogs. Providing environmental enrichment or food dispensing toys can be considered.

**Follow-Up**

The initial weight loss visit should take place approximately 2 weeks after starting a weight loss regimen. At this visit the rate of weight loss can be calculated, diet history reviewed, food intake adjusted, patient’s BCS and muscle condition assessed, and potential compliance related issues addressed. To calculate rate of weight loss per week:

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  \left( \frac{\text{Weight loss since last recheck}}{\text{weight at last recheck}} \right) \times 100 \div \text{number of weeks since recheck}
  \]

A weight loss rate of 1-2% of body weight per week is recommended. For patients whose rate is outside this acceptable range, a complete review of the patient’s diet history should be obtained to determine if owner or pet compliance is at fault. A comprehensive list of potential compliance related issues with suggested solutions is provided in the AAHA Weight Management Guidelines. If the rate of weight loss is outside this acceptable range and no compliance issues are identified, the food intake can be adjusted by increasing or decreasing food by approximately 5 – 10% of calories. Weight should be monitored every 2 weeks until the patient is losing at an appropriate rate, and then weigh-ins can be performed monthly. The use of a dedicated veterinary technician to perform the weight recheck and calculations can be time saving. Having the owner book their next recheck appointment before they leave the office has improved compliance in the author’s practice. Once the patient has reached their IBW, their kcal intake can be increased by 10 – 20% initially to maintain their current body weight. Additional follow-up is needed to make sure weight is maintained. MER following weight loss may remain low. Following a weight loss program, 48% of dogs were shown to regain >5% of their body weight. Dogs switched to a standard maintenance diet were more likely to regain weight while purpose formulated weight management diets significantly limited regain. Continuation of a weight management diet, treat allowance, and exercise recommendations can help avoid regain.

**References – additional references available from the author**