

# Evaluation of the Senior Cat with Weight Loss

*Susan E. Little*

## OUTLINE

Prevalence of Weight Loss, 1176  
Causes of Weight Loss, 1176

Diagnosis of Weight Loss, 1178  
Nonspecific Management of Weight Loss, 1180

### PREVALENCE OF WEIGHT LOSS

The easiest problems to detect in senior cats are weight loss and decline in body condition, but they are also problems that may challenge the clinician's diagnostic and therapeutic skills. The American Association of Feline Practitioners (AAFP)/American Animal Hospital Association (AAHA) feline life stage guidelines define a senior cat as 11 to 14 years old and a geriatric cat as 15 years and older.<sup>20</sup> The term "senior" is often used to refer to all cats more than about 10 years of age and will be used as such in this chapter.

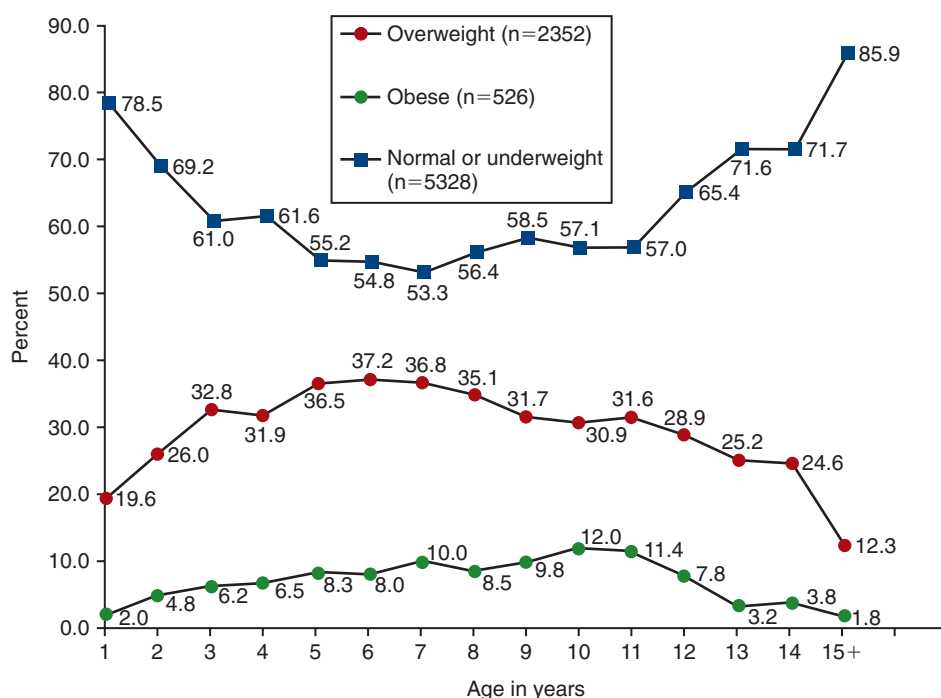
The prevalence of obesity decreases with age in cats; in fact, senior cats have a tendency to be underweight (Figure 38-1).<sup>6,10,13,18</sup> In a report of 191 cats at the Waltham Centre for Pet Nutrition (Melton Mowbray, United Kingdom), ranging in age from 1 to 13 years, the heaviest cats were neutered males aged 5 to 8 years, while cats greater than 11 years had a tendency to exhibit lower body weights than younger cats.<sup>6</sup> In a survey of more than 2,000 cats presented to veterinary hospitals in the Northeastern United States, the proportion of overweight cats increased until 7 years of age, after which it declined, especially in cats more than 10 years of age.<sup>18</sup> Similar patterns were found in another study, where the proportion of overweight cats peaked at 7 years of age, and the proportion of underweight cats increased sharply at 11 years of age.<sup>1</sup> Longitudinal data collected on 53 healthy cats more than 11 years of age at the Waltham Centre indicates that for most cats weight loss or weight maintenance, rather than weight gain, is a feature of old age.<sup>6</sup> After 8 years of age, 50% of cats in

that report maintained weight and 30% lost weight. It appears that a significant proportion of obese middle-aged cats die before reaching old age (e.g., from diseases such as diabetes mellitus or hepatic lipidosis), and a similar proportion lose weight into their senior years. Those senior cats that are obese have probably been obese for most of their lives.

### CAUSES OF WEIGHT LOSS

The reasons for a tendency to weight loss with aging in cats are probably complex and interrelated. As discussed in Chapter 37, maintenance energy requirements (MERs) in cats decrease by about 3% per year until about 11 years of age.<sup>3,9</sup> After 11 years of age, MERs actually increase and may contribute to the tendency of senior cats to be underweight if their energy needs are not met. An investigation of changes in body composition with aging found that lean body mass drops dramatically after 12 years of age, and that by age 15, cats may have a mean lean tissue mass less than 2 kg (4.4 lb), one third less than cats aged 1 to 7 years of age (mean, 3 kg [6.6 lb]).<sup>13</sup> Mean percentage body fat also decreases progressively after 12 years of age so that the lean body mass to fat ratio does not show significant changes with aging. The combination of reduced lean mass and body fat contributes to the frail look of many elderly cats (Figure 38-2).

Changes in digestive efficiency occur with age and may contribute to weight loss. Older cats are less efficient at digesting fats and proteins.<sup>7</sup> In one study, 22%



**FIGURE 38-1** Prevalence of obesity, overweight, normal, or underweight by age for 8,206 cats examined by veterinarians in the United States. (Adapted from Lund EM, Armstrong PJ, Kirk CA et al: *Prevalence and risk factors for obesity in adult cats from private US veterinary practices*, Intern J Appl Res Vet Med 3:88, 2005.)



**FIGURE 38-2** Many elderly cats have reduced lean body mass and fat mass as well as muscle wasting.

of cats more than 14 years old had protein digestibility of less than 77%, and 33% of cats more than 12 years old had fat digestibility of less than 80%.<sup>11</sup> To compensate, senior cats may need to increase their daily food intake by as much as 25%.<sup>19</sup> In a study of 85 senior cats on a long-term feeding study (spanning 7 years), there was a significant increase in total kcal/kg body weight ingested and total daily food consumption in cats from 10 to 15 years of age.<sup>3,4</sup> Despite the increase in caloric intake, body weight decreased with age, particularly after age 13.

Unfortunately, there are very little data available on changes in gastrointestinal tract function with aging in cats to explain this decline in digestive efficiency. In humans, reduced secretion and activity of pancreatic lipase and reduced capacity for the production, transport, and secretion of bile acids has been documented with aging. It is tempting to speculate that similar mechanisms might be at play in cats.

Although changes in feeding patterns occur with age in some species and may contribute to weight loss, this does not seem to be the case in cats. One study evaluated the effect of age on feeding patterns and determined there was no difference between feeding patterns of younger cats (average age, 3 years) and older cats (average age, 11.6 years).<sup>12</sup> Cats of all ages consumed regular small meals during both day and night. However, owners tend to feed senior cats differently than younger cats. In a telephone survey evaluating feeding of non-therapeutic diets to 429 adult cats, those cats 12 years of age and older were more likely to be fed canned foods and table scraps compared with younger cats.<sup>8</sup>

The dogma that all older cats should be fed reduced energy “senior” diets must be re-evaluated as more is learned about nutritional needs of older cats at various ages. A feeding plan must be tailored to body condition and the presence of diseases as well as life stage. Considering the available data on metabolism and body weight in aging cats, it seems likely that many elderly cats, particularly those more than 12 years of age that are not overweight, would benefit from frequent small

meals of energy-dense, highly digestible diets to maintain body weight and lean tissue mass and avoid protein:calorie malnutrition. Protein:calorie malnutrition is associated with important detrimental effects, such as anemia, hypoproteinemia, delayed healing, decreased immune function, and compromised function of major organ systems (gastrointestinal, pulmonary, cardiovascular).<sup>15</sup> Despite the numerous advantages of feeding canned diets to senior cats (e.g., increased water content, higher proportion of animal source protein), most canned diets have a lower caloric density based on volume fed than dry diets. Therefore attention must be paid to ensure the caloric intake of cats on canned diets is appropriate.

Other reasons for the susceptibility of senior cats to lose weight may include the presence of diseases (including those causing pain) and decreased appetite because of dulling senses of taste and smell. Early detection of weight loss is important, because it may lead to early detection of disease. A study of 258 cats in a Nestle Purina colony that died of cancer, renal failure, and hyperthyroidism determined weight loss started about 2.5 years before death.<sup>3</sup> Cats dying from other causes started losing body weight even earlier, about 3.75 years before death. Body weight loss two years prior to death was greater than 6% in cats with cancer, renal failure, and hyperthyroidism. During the last year of life, the average weight loss was greater than 10% for cats dying of all causes. Gradual weight loss is often overlooked by owners. Therefore the body weight and body condition score (see Chapter 3) should be determined and recorded at every opportunity, because weight loss may be the earliest sign of disease. Percentage weight change is an easily performed calculation  $([\text{previous weight} - \text{current weight}] / \text{previous weight})$  that detects subtle trends. Muscle condition scoring is also useful in senior cats for early detection of loss of body condition (see Chapter 37). It is important to note that diseases causing weight loss in senior cats are not always associated with inappetence. Because weight loss can occur with either an increased or decreased appetite, it is important to encourage owners to report any *change* in appetite.

## DIAGNOSIS OF WEIGHT LOSS

Diagnosis of weight loss in senior cats is dependent on thorough data gathering, because there are many potential causes. In human geriatric medicine, a mnemonic consisting of ten “Ds” has been suggested to determine the cause of involuntary weight loss (Box 38-1),<sup>16,21</sup> and many of these categories are useful considerations for senior cats as well. In elderly humans, the most common causes of weight loss are depression, cancer, and benign gastrointestinal disease.

### BOX 38-1

#### The Ten Ds for Weight Loss in Elderly Human Patients

1. Dentition
2. Dysgeusia (an altered ability to taste)
3. Dysphagia
4. Diarrhea
5. Disease (chronic)
6. Depression
7. Dementia
8. Dysfunction
9. Drugs
10. Do not know

Adapted from Robbins LJ: Evaluation of weight loss in the elderly, *Geriatrics* 44:31, 1989. Wise GR, Craig D: Evaluation of involuntary weight loss. Where do you start? *Postgrad Med* 95:143, 1994.

TABLE 38-1 Signs Suggestive of Pain in Cats

General Signs	Specific Signs
Changes in normal behavior	Decreased mobility or activity, lethargy, inappetence, decreased grooming
Abnormal behaviors	Inappropriate elimination, inappropriate vocalization, aggression, decreased social interactions, altered facial expression and posture, restlessness, hiding
Reactions to touch	Increased body tension, flinching when painful areas are palpated
Changes in physiologic parameters	Elevated heart rate, elevated respiratory rate, elevated or decreased body temperature, elevated or decreased blood pressure, pupillary dilation

Adapted from Hellyer P, Rodan I, Brunt J et al: AAHA/AAFP pain management guidelines for dogs and cats, *J Feline Med Surg* 9:466, 2007.

A complete history, including a nutritional history, is the first step in diagnosis. Diet quality should be investigated to ensure the patient is receiving an adequate amount of energy and protein. Attention should be paid to trends in food and water consumption and questions should be asked about signs of pain (Table 38-1), behavior changes (see Box 37-1), changes in elimination patterns, and changes in mobility (see Box 37-4), as well as presence of vomiting or diarrhea. Senior cats often have more than one health problem and may be receiving multiple medications, many of which cause gastrointestinal distress, including anorexia, such as nonsteroidal antiinflammatory drugs (NSAIDs), antibiotics, and cardiac medications. A thorough physical examination should include assessment of weight and body condition, an orthopedic examination, and blood pressure

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**FIGURE 38-3** Diagnostic algorithm for weight loss in senior cats with normal or increased appetite. (Adapted from Laflamme DP: *Nutrition for aging cats and dogs and the importance of body condition*, Vet Clin North Am Small Anim Pract 35:713, 2005.)

measurement. Specific areas that may yield valuable clues include

1. Oral cavity: Dental and oral diseases (e.g., periodontal disease, tooth resorption, tumors) are common in older cats and may be associated with pain and decreased appetite; feline orofacial pain syndrome is a neuropathic disorder most commonly found in the Burmese breed in the United Kingdom.<sup>17</sup>
2. Eye: An ocular examination, including the retina, may provide evidence consistent with systemic hypertension as well as conditions such as glaucoma, neoplasia, and infectious diseases (e.g., toxoplasmosis, cryptococcosis).
3. Neck and thorax: Thyroid nodules associated with hyperthyroidism may be palpable, and cardiac changes associated with hyperthyroidism or hypertension (e.g., tachycardia, arrhythmia, heart murmur) may be appreciated; decreased thoracic compressibility may be associated with masses or effusions.
4. Abdomen: Thickening of the intestinal wall and mesenteric lymphadenopathy may be associated with inflammatory bowel disease or neoplasia; abdominal masses associated with neoplasia may be found; cranial abdominal pain may be associated with pancreatitis; changes in kidney size and shape may be associated with chronic kidney disease (CKD), polycystic kidney disease, feline infectious peritonitis, hydronephrosis secondary to a ureterolith, pyelonephritis, or neoplasia.
5. Musculoskeletal system: Muscle wasting may be evident especially over the lumbar area; swelling, pain, and stiffness in joints may be associated with degenerative joint disease.

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**FIGURE 38-4** Diagnostic algorithm for weight loss in senior cats with decreased appetite. (Adapted from Laflamme DP: *Nutrition for aging cats and dogs and the importance of body condition*, Vet Clin North Am Small Anim Pract 35:713, 2005.)



**FIGURE 38-5** Weight loss may occur despite a normal or increased appetite in cats with diseases such as hyperthyroidism.

Causes of weight loss in senior cats may be categorized by quality of appetite (Figures 38-3 and 38-4). With a normal or increased appetite, diseases causing malabsorption or maldigestion (e.g., inflammatory bowel disease, gastrointestinal lymphoma) or excessive protein loss (e.g., protein-losing nephropathy or enteropathy, diabetes mellitus, hyperthyroidism) must be considered (Figure 38-5). With a diminished appetite, investigations must focus on oral cavity diseases, systemic diseases



(e.g., neoplasia, CKD, liver disease, gastrointestinal disease, retroviral infection), and diseases causing pain (e.g., degenerative joint disease).

The minimum laboratory database for investigation of weight loss in senior cats includes a complete blood count, serum biochemistries and electrolytes, total thyroxine ( $T_4$ ), complete urinalysis including microscopic examination of sediment, and retroviral testing. Most common causes of weight loss in this age group will be quickly diagnosed or eliminated with this minimum database. Cats with protein:calorie malnutrition may have lymphopenia, anemia, lower than expected blood urea nitrogen (BUN) and creatinine, and increased liver enzymes and bilirubin. In severely protein-deficient animals, serum total protein and albumin may be reduced. Serum creatinine kinase (CK) activity may be a useful marker for assessment and monitoring of nutritional status in cats. In one study, serum CK was significantly increased in hospitalized anorectic cats compared with nonanorectic cats, and was significantly lower after 48 hours of nutritional support through a nasoesophageal tube.<sup>5</sup>

Depending on the physical examination findings and results of initial testing, further laboratory investigations may include bile acid testing and extended thyroid hormone testing. Pancreatic (e.g., chronic pancreatitis) and gastrointestinal disease (e.g., inflammatory bowel disease, lymphoma) are common causes for weight loss that may not be readily apparent from the history, physical examination, and initial laboratory testing. Blood tests for pancreatic and gastrointestinal disease include cobalamin, folate, and feline pancreatic lipase immunoreactivity. Finally, more advanced diagnostics will be indicated for a subset of patients, such as abdominal imaging or endoscopy. Exploratory laparotomy or laparoscopy should be considered when the cause of weight loss remains undiagnosed. During surgery, samples for histopathology should be collected even if the tissue appears grossly normal. Sites to sample include liver, pancreas, lymph nodes, stomach, and multiple areas of the small intestine.

### NONSPECIFIC MANAGEMENT OF WEIGHT LOSS

The best chance to reverse weight loss is to diagnose and treat underlying diseases. However, nonspecific measures for nutritional support are often part of the treatment plan. Encouraging increased food intake can be accomplished by feeding an energy-dense, nutrient-dense diet that is palatable to the cat; some cats prefer diets with high moisture content while others prefer dry diets. Examples of appropriate diets include diets designed for growth and recovery or critical care. [Box 38-2](#) discusses ways to encourage senior cats to eat. Even

#### BOX 38-2

##### Ways to Encourage Senior Cats to Eat

1. Offer fresh favorite and familiar foods to avoid learned aversions
2. Use wide, shallow food and water bowls
3. Warm the food to body temperature
4. Moisten the food
5. Feed in a quiet, stress-free environment
6. Use encouragement (e.g., petting) and praise during feeding

if a therapeutic diet is recommended, initially it is best to feed familiar foods, because learned aversions may be induced by feeding novel foods to sick or hospitalized cats. It is better for a sick cat to eat any food rather than no food at all. Slow introduction of the recommended diet can be made once the cat's condition and appetite have improved and it has been discharged from hospital.

Short-term use of appetite stimulants may be helpful in some anorexic cats. In addition to the drugs listed in Table 18-1, midazolam (2 to 5  $\mu\text{g}/\text{kg}$ , IV) has been reported to stimulate appetite within 2 minutes without sedation or other side effects.<sup>14</sup> If adequate food intake cannot be achieved, nutritional support through tube feeding should be considered (see Chapter 18). Nutritional support should be considered earlier rather than later for moderately to severely malnourished cats. Some anorectic patients with diseases such as advanced renal disease, hepatopathy, protein-losing gastrointestinal disease, or protein-losing glomerular disease will benefit from early nutritional support before significant weight loss occurs. This may be especially true for cats with neoplasia. In one study of 57 feline cancer patients, median survival time of cats with a body condition score less than 5/9 was 3.3 months compared with a mean survival time of 16.7 months for cats with a body condition score of 5/9 or greater.<sup>2</sup>

Cats are solitary feeders by nature, and elderly cats often do not cope well with competition and stressors. Therefore many older cats in multicat homes would benefit from being fed separately or being offered supplemental meals. Owners should be educated to monitor the daily food intake of senior cats carefully. One way to do this when cats are fed individually is to weigh food bowls before and after feeding. Many owners are willing to measure the amount fed and record the amount the cat has eaten; this can be valuable information for the clinician.

#### References

1. Armstrong PJ, Lund EM: Changes in body composition and energy balance with aging, *Vet Clin Nutr* 3:83, 1996.

2. Baez JL, Michel KE, Sorenmo K et al: A prospective investigation of the prevalence and prognostic significance of weight loss and changes in body condition in feline cancer patients, *J Feline Med Surg* 9:411, 2007.
3. Cupp C, Perez-Camargo G, Patil A et al: Long-term food consumption and body weight changes in a controlled population of geriatric cats [abstract], *Comp Contin Educ Pract Vet* 26:60, 2004.
4. Cupp CJ, Jean-Philippe C, Kerr WW et al: Effect of nutritional interventions on longevity of senior cats, *Intern J Appl Res Vet Med* 5:133, 2007.
5. Fascetti AJ, Mauldin GE, Mauldin GN: Correlation between serum creatinine kinase activities and anorexia in cats, *J Vet Intern Med* 11:9, 1997.
6. Harper E: Changing perspectives on aging and energy requirements: aging, body weight and body composition in humans, dogs and cats, *J Nutr* 128:2627S, 1998.
7. Harper J: Changing perspectives on aging and energy requirements: aging and digestive function in humans, dogs and cats, *J Nutr* 128:2632S, 1998.
8. Laflamme DP, Abood S, Fascetti A et al: The effect of age on how cats are fed, *Proceedings 33rd World Small Animal Veterinary Association World Congress*, Dublin, Ireland, August 20-24, 2008.
9. Laflamme DP, Ballam JM: Effect of age on maintenance energy requirements of adult cats, *Comp Contin Educ Pract Vet* 24:82, 2002.
10. Lund EM, Armstrong PJ, Kirk CA et al: Prevalence and risk factors for obesity in adult cats from private US veterinary practices, *Intern J Appl Res Vet Med* 3:88, 2005.
11. Patil AR, Cupp C, Perez-Camargo G: Incidence of impaired nutrient digestibility in aging cats [abstract], *Comp Contin Educ Pract Vet* 26:60, 2004.
12. Peachey SE, Harper EJ: Aging does not influence feeding behavior in cats, *J Nutr* 132:1735S, 2002.
13. Perez-Camargo G: Cat nutrition: what is new in the old? *Comp Contin Educ Pract Vet* 26:5, 2004.
14. Rangel-Captillo A, Avendano-Carillo H, Reyes-Delgado F et al: Immediate appetite stimulation of anorexic cats with midazolam [abstract], *Comp Contin Educ Pract Vet* 26:61, 2004.
15. Remillard RL: Nutritional support in critical care patients, *Vet Clin North Am Small Anim Pract* 32:1145, 2002.
16. Robbins LJ: Evaluation of weight loss in the elderly, *Geriatrics* 44:31, 1989.
17. Rusbridge C, Heath S, Gunn-Moore DA et al: Feline orofacial pain syndrome (FOPS): a retrospective study of 113 cases, *J Feline Med Surg* 12:498, 2010.
18. Scarlett JM, Donoghue S, Saidla J et al: Overweight cats: prevalence and risk factors, *Int J Obes Relat Metab Disord* 18(Suppl 1):S22, 1994.
19. Taylor EJ, Adams C, Neville R: Some nutritional aspects of ageing in dogs and cats, *Proc Nutr Soc* 54:645, 1995.
20. Vogt AH, Rodan I, Brown M et al: AAFP-AAHA: Feline life stage guidelines, *J Feline Med Surg* 12:43, 2010.
21. Wise GR, Craig D: Evaluation of involuntary weight loss. Where do you start? *Postgrad Med* 95:143, 1994.