

Keeping Pets Youthful with Senior Nutrition

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The age at which a pet enters their 'senior years' is variable and differs depending on species and breed. Assessment as a pet reaches middle age should be performed more frequently. Additionally, these assessments should be based on breed lifespan, with an appropriate senior wellness workup.¹ The veterinary healthcare team should properly assess a pet to determine whether the feeding plan and nutritional needs of the patient. This includes a complete nutritional assessment, taking into account any medical conditions (eg, renal disease, diabetes) that require nutritional modification, and making a nutritional recommendation.²

Continued improvements in control of infection and nutrition in recent years has resulted in a gradual increase in the average lifespan of the companion cat and dog. The maximum lifespan of any given species has remained relatively fixed; the average lifespan within a given population can be affected by genetics, health care and nutrition.³ It is estimated that more than 40% of the dogs and 30% of the cats in the United States are at least 6 years old, and approximately 30% of these animals are older than 11 years. While we are seeing more and more older animals, it is important to remember that old age is not a disease, and if they are otherwise healthy, old age alone will not kill any animal.⁴

In the United States, older dogs reportedly make up a significant amount of the pet dog population. It is estimated that ~ 40% of the 78 million pet dogs in the United States are 7 years old,^{4,5} with another survey suggesting the percentage of older dogs to be as high as 49%.⁶ 37% of dogs and 44% of cats in Australia are over 7 years of age⁷. Around the world it has been reported that only 1 in 5 owners of older cats and 1 in 4 owners of older dogs are providing age appropriate nutrition.⁸

Senior or Mature Adult Dogs

The senior, or geriatric, dog is approximately 7 years of age in an animal with an average life expectancy of approximately 13.5 years.^{9,10} This range varies widely, however; the figure given here is for medium-sized dogs. Smaller breeds tend to have longer life spans; larger-breed dogs tend to have shorter life spans. The nutritional goals for the senior dog are similar to those for the adult dog—optimize quality of life, increase longevity, and minimize disease. As the animal reaches the age of a senior pet, bodily changes occur. The senior dog has a diminished ability to hear, see, smell, and taste. The animal may not be able to readily adapt to stress, and its organs may not function at a normal level. As animals age, their organs lose the ability to compensate. Many older dogs and cats face chronic renal disease as they age. As the disease progresses, it affects the animal's ability to eliminate waste products. It's important not to feed a food that will create additional work for the kidneys or liver. The kidneys must work harder to excrete phosphorus, urea, and other metabolic waste by-products. The goals of feeding the senior patient are to decrease protein, phosphorus, and sodium. Every animal is an individual; the feeding regimen should take into account each animal's specific needs. Some senior dogs have difficulty maintaining body weight, while others gain weight easily. It's important not to make general recommendations for a subset of animals.

Nutritional management of mature adult dogs is focused upon:

- Maintenance of optimal nutrition
- Risk factor management
- Disease management (i.e., slowing progression of certain chronic diseases)
- Improvement in the quality and length of life.

Older dogs are more susceptible to dehydration especially if they are prescribed diuretics or have chronic renal disease. Access to fresh, clean water must be discussed with pet owners and water intake should be routinely monitored.¹⁰

As dogs age, they become slower and less active. Thus, it may be appropriate to feed a more energy-dense food to very old dogs. Because of the potential for mature dogs to have different energy needs, energy densities in foods recommended for this age group may vary from 3.0 to 4.0 kcal/g dry matter (DM). Fat levels for the majority of mature dogs should fall between 7 and 15% DMB.⁹

Constipation is a common finding in mature dogs due to reduced water intake, limited activity, and reduced motility in the colon. Fiber helps to combat these findings and normalize the GI tract. Also, fiber added to foods for obese-prone mature dogs dilutes calories. The recommended levels of crude fiber in foods to be fed to mature dogs are at least 2% (DMB).

Healthy mature dogs should receive enough protein to ensure protein-energy malnutrition does not occur. Older pets may begin to lose muscle mass and therefore increasing protein in the diet may be warranted. However, older pets are also at increased risk for renal disease in which case higher levels of protein are not recommended. Improving protein quality, rather than increasing the amount eaten, can provide sufficient protein for the older pet. Dietary protein should not be restricted in healthy mature adult cats. Adequate protein and energy intake are needed to sustain lean body mass, protein synthesis and immune function. For healthy mature dogs the protein percentage is recommended to be 15 to 23% protein DMB.

Senior or Mature Adult Cats

Cats are considered senior at 10 to 12 years of age.^{10,11} Once a cat turns 7, there is an increased risk of age-related diseases. At 7 the cats' nutritional needs are changing. As cats age, they become less active and may lose muscle mass or lean body mass. It's important to feed the older cat to maintain body composition and weight. Remember to discuss fresh water with senior cat owners. Make yourself aware of the risks older cats may experience and provide food and an environment to decrease those risks, if possible. Many older cats face chronic renal disease as they age. The kidneys must work harder to excrete phosphorus, urea, and other metabolic waste by-products. Senior cats have an increased requirement for potassium during renal disease. Feeding a food lower in protein and phosphorus but higher in potassium will help meet the nutritional needs of the feline senior renal patient. Always have fresh water available to the pet.

Nutritional management of mature adult cats should be focused on:

- Maintenance of optimal nutrition
- Risk factor management
- Disease management (i.e., slowing progression of certain chronic diseases)
- Improvement in the quality and length of life.

Older cats are more susceptible to dehydration especially if they are prescribed diuretics or have chronic renal disease. In cats, aging impairs thirst sensitivity even further than previously known for cats. Access to fresh, clean water must be discussed with pet owners and water intake should be routinely monitored.

Older cats begin to slow down and are less active. Thus, it may be appropriate to feed a more energy-dense food to senior pets. In mature cats, the energy density of foods should range from 3.5 to 4.5 kcal/g DMB.^{10,11}

Fat levels for the majority of mature cats should range between 10 and 25% fat on a DMB.¹¹ Essential fatty acid requirements should also be met as previously discussed with adult cats.

Constipation is a more common in senior cats due to reduced water intake, limited activity, and reduced motility in the colon. Fiber helps to combat these findings and normalize the GI tract. Also, fiber added

to foods for obese-prone mature cats dilutes calories. The recommended levels of crude fiber in foods to be fed to mature cats $\leq 5\%$ DMB.

Healthy mature adult cats should receive enough protein to ensure protein-energy malnutrition does not occur. Older pets may begin to lose muscle mass and therefore increasing protein in the diet may be warranted. However, older pets are also at increased risk for renal disease in which case higher levels of protein are not recommended. Improving protein quality, rather than increasing the amount eaten, can provide sufficient protein for the older pet. Dietary protein should not be restricted in healthy mature adult cats. Adequate protein and energy intake are needed to sustain lean body mass, protein synthesis and immune function. For healthy mature cats, moderate levels of dietary protein - 30 to 45% DMB are recommended.

Completing a Nutritional Evaluation for Senior Pets

An in-depth nutritional history should be taken with every pet that presents to the hospital, every time they present. Veterinary technicians should ask questions of the owner in an open-ended questioning style. This allows for the owner to provide reliable and accurate information without feeling as though they are being judged by the veterinary team. The following are some questions to ask the client when completing a nutritional evaluation:

- Tell me about the pet's activity level?
 - Have you noticed any changes?
- Tell me about where your pet spends his/her days and nights.
- What changes in weight have you noticed?
 - What's the percentage of change of weight?
 - What's the time frame of the change?
- How often do you body condition score your pet?
 - Tell me the latest 3 scores that you have done
- Tell me about your pets' drinking habits?
 - Is water available at all times?
 - How is it offered?
- What are your pet's exercise habits?
- Tell me what your pet eats over a 24 hour period
 - What feeding method is used?
 - Does your pet have a good appetite?
 - How much food is offered at each feeding?
 - Have you noticed any difficulties when your pet eats?
 - Tell me of any recent changes in anything your pet eats.
- What doesn't your pet like to eat?
- Does the pet have any adverse food reactions?
- How is the food stored at home?
- Tell me about the treats your pet receives?
- Does your pet receive any medications?
 - Supplements
- Is the pet experiencing any vomiting or diarrhea?
- Tell me about your pet's sleeping habits
- Tell me about your pet's toileting habits

Answering these questions will help better identify problems and potential solutions in managing the senior patient, both in wellness and disease.

Aging & Nutrition Science

It is important for veterinary nurses to remember that although pets may not be showing outward signs of aging, every cell in the body does age. As pets age there is an increased risk of impact on the brain, affecting thinking, learning, memory, and social interactions. Ultimately, this may lead to behavioral changes in dogs and cats. Pet owners may notice these changes, but not attribute the behavior alterations to ageing.

Cutting edge scientific tools such as predictive biology have been utilized to explore the effects of nutrition on cell function. Predictive Biology looks at what is occurring at the gene level. Each gene in the body contains the code to build a specific protein. Nutrients can influence genes to produce more or less of the protein for which they code. This is known as gene expression. It has been found that younger dogs and cats have very different gene expressions than older animals. These gene expression changes affect key metabolic pathways and body functions including oxidation, inflammation, and the immune system. The next step was to identify nutritional interventions which may positively impact the gene expression alterations in older pets. This, coupled with the scientific knowledge of taste preferences in older pets, resulted in age appropriate nutrition for older pets which helps to counter the free radicals that lead to aging in every cell.

Old age is not a disease. However, physiologic changes do occur, and the nutritional needs of senior pets differ from those of younger adult pets. It is important for veterinary technicians to understand these needs and educate pet owners about them, and how nutrition plays a role in managing senior pets. Proper nutrition can help the pet live longer and with a better quality of life – and isn't that why we all entered this field?

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