

2023 AAHA Senior Care Guidelines for Dogs and Cats

Ravinder Dhaliwal, DVM, MS, DACVIM (Oncology), DABVP (Canine and Feline)[†], Elizabeth Boynton, DVM, Sheila Carrera-Justiz, DVM, DACVIM (Neurology), Nicole Cruise, CVT, Mary Gardner, DVM, Janice Huntingford, DVM, DACVSMR, MS, CVPP, CVA, Heidi Lobprise, DVM, DAVDC, Elizabeth Rozanski, DVM, DACVECC, DACVIM (Small Animal Internal Medicine)

ABSTRACT

Veterinary professionals are taught to recognize that “old age is not a disease.” However, clients may have the perception that older dogs and cats undergo an unavoidable physical, mental, and behavioral decline attributable simply to old age. The veterinary team’s role includes providing medical care and support to senior pets to maintain their quality of life, as well as supporting and educating clients on proper senior animal care and addressing any misconceptions about the aging process. These Guidelines describe a systematic approach to the healthcare of the senior pet that is based on an evidence-guided assessment of both healthy and unhealthy canine and feline patients. By using evidence-guided medicine, which may include conventional and integrative approaches as well as environmental management for the senior pet, the patient’s quality of life can be enhanced and potentially extended during this vulnerable life stage. Developing a senior program for the veterinary practice requires appropriate training of the entire healthcare team and includes a robust client education program that focuses on the wellbeing of the senior pet. Palliative and hospice care should be included in the education and information provided for both the veterinary team and the families of senior pets. (*J Am Anim Hosp Assoc* 2023; 59:1–21. DOI 10.5326/JAAHA-MS-7343)

AFFILIATIONS

MedVet Silicon Valley Veterinary Specialists, San Jose, California (R.D.); Western University of Health Sciences, Pomona, California (E.B.); University of Florida, Gainesville, Florida (S.C.-J.); Northcentral Technical College, Wausau, Wisconsin (N.C.); Lap of Love, Jupiter, Florida (M.G.); Essex Animal Hospital, Essex, Ontario, Canada (J.H.); Cibolo Creek Veterinary Hospital, Kerrville, Texas (H.L.); Department of Clinical Sciences, Tufts Cummings School of Veterinary Medicine, North Grafton, Massachusetts (E.R.)

CONTRIBUTING REVIEWERS

Kathleen Cooney, DVM, CHPV, CCFP (Caring Pathways, Berthoud, Colorado); Lynn Hendrix, DVM, CHPV (Beloved Pet Mobile Vet, World Veterinary Palliative Medicine Organization, Davis, California)

Correspondence: ravinder.dhaliwal@medvet.com (R.D.)

† R. Dhaliwal is the chair of the AAHA Senior Care Guidelines Task Force.

These guidelines were prepared by a task force of experts convened by the American Animal Hospital Association. This document is intended as a guideline only, not an AAHA standard of care. These guidelines and recommendations should not be construed as dictating an exclusive protocol, course of treatment, or procedure. Variations in practice may be warranted based on the needs of the individual patient, resources, and limitations unique to each individual practice

setting. Evidence-guided support for specific recommendations has been cited whenever possible and appropriate. Other recommendations are based on practical clinical experience and a consensus of expert opinion. Further research is needed to document some of these recommendations. Drug approvals and labeling are current at the time of writing but may change over time. Because each case is different, veterinarians must base their decisions on the best available scientific evidence in conjunction with their own knowledge and experience.

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BCS (body condition score); CADES (CANine DEmentia Scale); CCD (canine cognitive dysfunction); DISHAA (Disorientation, alterations in social Interactions, changes in Sleep-wake cycles, loss of House training and other learned behaviors, altered Activity levels, and increased Anxiety); FCD (feline cognitive dysfunction); GOLPP (geriatric onset laryngeal paralysis polyneuropathy); IRIS (International Renal Interest Society); LBM (lean body mass); MER (maintenance energy requirements); QOL (quality of life)

Introduction

For both canine and feline patients, veterinarians should view the pet's senior years as distinct from other life stages. The senior dog or cat requires a tailored healthcare plan including preventive, diagnostic, and treatment protocols that are specific to the aging animal's physiologic needs. In addition, families with older pets may have a strong bond of affection and interdependence that may not be measured in monetary terms and should be considered in the overall healthcare plan. A useful perspective for the veterinary team may include the following considerations:

- For many clients, their pets' senior years are as important and meaningful as the sum of all the preceding life stages.
- Managing the health and wellbeing of the aging pet is an important aspect of clinical practice.

Healthcare decisions affecting the older pet may be clinically challenging for the veterinarian and may be affected by the physical, psychosocial, emotional, or spiritual needs of the pet's family. Optimal care of the senior pet involves a multifaceted approach, including diagnostics, medical and interventional therapies, pain management, nutrition, dentistry, anesthesia, modifying the environmental setting, managing behavioral problems, and recognizing and managing comorbidities. Senior care also includes educating and planning for end-of-life care for the patient and supporting the caregivers and family in this process. The Guidelines include a comprehensive table, organized by body system, which presents diagnostic approaches for commonly encountered diseases of senior dogs and cats. The Guidelines also include a table of common diagnostic tests and recommended frequencies for senior patients and home care tips for clients.

These Guidelines represent the recommendations of a task force of experts with decades of collective experience in caring for aging canine and feline patients. The authors have organized the Guidelines into three principal sections:

- Evaluating and managing the healthy senior pet.
- Evaluating and managing the unhealthy senior pet, which includes an end-of-life section.
- Developing education for both veterinary teams and clients that emphasizes the care and wellbeing of the senior pet.

These Guidelines offer recommendations that can assist practices in developing additional education resources that highlight personalized senior pet care. This approach can promote:

- Expertise and consistent messaging in senior care among the veterinary team.
- Client education that creates awareness of "best practices in senior pet care" for maintaining the health of older dogs and cats.
- Involvement of the entire veterinary team in educating clients on the health and quality of life (QOL) of senior pets.

The Guidelines are not intended to be all-inclusive in their recommendations, but to present an evidence-guided framework for

senior pet healthcare. The text cites various previously published clinical guidelines on specific topics such as dentistry, pain management, anesthesia, nutrition, and end-of-life care that practitioners can refer to for in-depth recommendations appropriate for the senior dog or cat.

A focus on senior pet care has many benefits for veterinary practices and their clients. These include strengthening the human-animal bond, enhancing and extending the patient's quality and duration of life, and deepening the veterinary/client/patient relationship.

Defining the Senior Patient

The term "senior" is used to describe the older, aging pet. Because of the variability in aging based on species and breed, there is no specific age for senior status. Moreover, the criteria for senior age status differ for dogs and cats. The *2019 AAHA Canine Life Stage Guidelines* define senior as "the last 25% of estimated lifespan through end of life."¹ The *2021 AAHA/AAFP Feline Life Stage Guidelines* and the *2021 AAFP Feline Senior Care Guidelines* define senior as cats greater than 10 yr of age.^{2,3}

Additional descriptive terms may be used to describe a senior pet's condition, such as "frailty," "immunosenescence," and "inflammaging." Frailty is a syndrome seen with advancing age initially described in people, in which the patient has a decreased functional reserve that leads to a decline in physiological and cognitive performance and a greater vulnerability to adverse medical outcomes.⁴ Scoring systems exist for assessment of frailty in dogs, and increased frailty scores may be a risk factor for death, although more studies are needed.^{4,5} Feline phenotype and index-based frailty scales are also available.³

Aging may have multiple biochemical changes that are noticeable only in the later stages of the age-related change. Earlier identification of age-related changes may improve the quality and quantity of life, but additional research is needed to detect those early biochemical changes and be able to use them as screening tests. Immunosenescence is the process of immune dysfunction that occurs with age. Immunosenescence involves the remodeling of lymphoid organs, leading to changes in the immune function of the elderly, which is closely related to the development of infections, autoimmune diseases, and malignant tumors.⁶ Evidence for this phenomenon has been reported in human medicine, but there is limited evidence in veterinary medicine. Inflammaging is another concept reported in human medicine, which posits that the rate of aging and age-related disease may be due to a chronic progressive proinflammatory phenotype.⁷ The occurrence of immunosenescence and inflammaging in dogs and cats has yet to be validated and should be considered as

hypothetical concepts in veterinary medicine until further evidence emerges.

Evaluating the Healthy Senior Pet

The initial intake at an office visit is essential for setting a welcoming and senior-friendly tone. Starting with an open-ended question like “What brings you and Harvey here today?” is a good way to initiate a conversation about the pet’s health and wellbeing. Eliciting a thorough history and gaining an understanding of the senior pet’s environment and background are crucial to establishing a relationship with the client and pet. Often there are issues not mentioned when the appointment was made that are best brought forward early in the visit. Older animals often come with a substantial list of concerns, which the client and veterinarian can mutually discuss and prioritize.⁸

The client may share additional crucial information about their senior pet if they are supported with empathy. A thorough history can provide important information to assess the pet’s health and may include exploring the patient’s eating and drinking habits, exercise, movement, play behavior, eliminations, attitude, grooming, vision, and hearing. Inquiring about any changes or disruptions in the household may also elicit crucial information.

A critical aspect of a patient’s history is establishing what pharmaceuticals, supplements, nutraceuticals, creams, oils, or other therapeutics are currently being given to the pet. This is important to evaluate the need for additional therapeutics and minimize drug interactions, and it is part of building a trusted relationship between client and veterinarian. Drug interactions may result in serious toxicities, negate the effect of medications, or create a physical change that would be detrimental to the animal (e.g., a nonsteroidal anti-inflammatory drug given to an animal currently taking steroids, resulting in gastrointestinal bleeding). Practitioners may need to evaluate any nutraceuticals the pet is currently on for potential interactions (e.g., turmeric, which is touted as an anti-inflammatory aid, yet has been shown to cause gastrointestinal ulceration in humans and mice).^{9,10} Additional examples include melatonin products made with xylitol and nutraceuticals like St. John’s Wort, turmeric (major component curcumin), ginseng, s-adenosyl-methionine, melatonin, and tryptophan that increase 5-hydroxytryptophan and can contribute to serotonin syndrome. Serotonin syndrome may occur with these nutraceuticals if the animal is also medicated with drugs commonly used in senior patients, including selective serotonin reuptake inhibitors such as fluoxetine, tricyclic antidepressants such as clomipramine and amitriptyline, monoamine oxidase inhibitors such as selegiline or L-deprenyl, azapirones such as buspirone, antidepressants such as trazadone, and phenylpiperidine opioids such as fentanyl and tramadol. Clients using cannabis products or other nontraditional therapies for their pets may be reluctant to disclose

this information unless they have built a trusted relationship with the clinician. Clients may believe that some products are safe simply because they are labeled as “natural.” Veterinarians must educate clients about the challenges and risks of using herbal, nutraceutical, or other therapies that may include lack of purity and potency certifications as well as potential toxicity, drug interactions, and potential injury.

A thorough physical examination can elicit more information as the next step in a senior pet appointment. A relaxed animal in a comfortable environment allows for a more accurate examination including detailed attention to the eyes and mouth, as well as palpation of the spine, neck, joints, musculature, digits, abdomen, and thoracic auscultation. When assessing musculoskeletal pain, mobility, and movement, checklists can be used as a screening tool and may provide additional information for both client and veterinarian. Chronic pain scales are a useful tool to assess musculoskeletal pain.¹¹ For additional information on assessing chronic pain, see the *2022 AAHA Pain Management Guidelines for Dogs and Cats*.¹² Client videos of their animal moving in their environment are additional useful tools to assess musculoskeletal pain, mobility, and movement. Videos of the pet ambulating or jumping can help detect early neuropathic or musculoskeletal disease.

A senior pet appointment may address issues such as decreased mobility from osteoarthritis, metabolic issues such as kidney or liver disease, and functional issues such as heart disease or neoplasia. For mobility issues, older animals may benefit from the use of pet-friendly techniques (low-stress handling, softened table examination surfaces or examining the pet off the table), as pain and distress may be more common for senior animals.^{13,14} Mobility may be reduced owing to arthritic changes, and care must be taken to gently manipulate limbs, joints, musculature, neck, and spine to explore underlying discomfort. Unlike dogs, cats rarely have crepitus in affected joints. However, studies have indicated that more than 60% of cats have osteoarthritis in at least one joint despite absence of this physical examination finding.^{11–13,15}

Neoplasia is more commonly found with senior pets and may be indicated from a thorough physical examination. Cutaneous masses noted on physical examination should be measured in all three dimensions, aspirated, and cytologically examined. Clinically, neoplasms such as mast cell tumors may be indistinguishable from benign growths (e.g., ubiquitous lipomas) and they may coexist, making the “watch and see” approach risky. A thorough, gentle abdominal and rectal palpation may also provide an early indication of abnormalities. Special attention should be given to the oral cavity, eye, and digits as sites of potential neoplasia.

A medical workup is also recommended for senior pets once or twice a year and may include a complete blood count, chemistry, and

urinalysis, as well as diagrams or photographs to better track changes and screening biomarkers such as symmetric dimethylarginine assay, N-terminal pro B-type natriuretic peptide, and C-reactive protein. It may also include other tests listed in **Table 1, Diagnostic Tests and Recommended Frequencies for Senior Dogs and Cats**.

Anesthetic and Surgical Considerations

Practitioners will find the *2020 AAHA Anesthesia and Monitoring Guidelines for Dogs and Cats* to be a useful, comprehensive supplement to this section of the Senior Care Guidelines.¹⁶

Senior pets may require general anesthesia for surgical and non-surgical procedures, such as dental care, to treat ailments and/or improve their QOL. Advanced age alone is not a contraindication to general anesthesia. Senior pets can safely undergo multiple anesthetic events if necessary. Medication choices and other precautions should be considered to minimize the risk for the pet. Because clients may have additional anxiety about anesthesia for their senior pet, the role of the veterinarian and technician includes reassuring the client of the indication for and safety of the procedure.

An anesthetic evaluation should include a preoperative physical examination, focusing on diseases that may increase risk. In addition to the physical examination, preoperative laboratory tests should be performed, with a specific focus on renal (creatinine) and cardiac function (N-terminal pro B-type natriuretic peptide). Imaging, including radiographs and ultrasonography, may also be indicated. Preoperative care may include preprocedural IV fluids in a patient with compromised renal function, where fasting or anxiety associated with hospitalization may decrease normal water consumption. Preoxygenation may be recommended for patients with cardiovascular or pulmonary illnesses.

Induction, maintenance, and monitoring anesthesia are also significant, and checklists and anesthetic forms may be used to minimize risk and complications. A dedicated, trained technician with a checklist can focus on monitoring anesthesia and be prepared for any potential complications associated with either the individual patient or specific risks associated with the procedure. Checklists can be comprehensive and may include handling of the pet, padding for the animal, monitoring tools, surgical needs such as blood product availability if hemorrhage is a potential complication, preoperative and postoperative analgesia and other indicated medications, a validated pain scale that is species specific, and a postoperative plan and patient discharge instructions. To lessen mobility complications, senior pets should be kept warm, handled gently, placed in a comfortable position, and kept on a well-padded surgical or treatment table. To minimize the time of anesthesia for the pet, it is recommended that the surgeon be readily available at the time of anesthesia

induction. Other considerations for anesthesia with a senior pet may include titrating doses of anesthetic agents as lower doses may be needed. Postprocedural analgesics should be prescribed as indicated by the procedure; consider that the dose needed for opioids and other analgesics may be different for senior pets. Validated pain scales can be very useful for postoperative analgesia care.¹²

From a surgical standpoint, the benefit to quality or quantity of life should be established with the client before surgery is performed. Many surgeries, including dental procedures, can result in substantial improvement in QOL. However, perhaps the biggest predictor of postsurgical QOL is preprocedure function; for example, a healthy, robust 15 yr old terrier would be expected to recover quickly from a mass removal, whereas a 13 yr old Labrador mixed-breed dog with geriatric onset laryngeal paralysis polyneuropathy (GOLPP), severe osteoarthritis, and International Renal Interest Society (IRIS) stage 3 renal disease may require a longer recovery time.⁶⁸

The surgeon should be experienced with the procedure and/or have adequate training in similar techniques. All necessary equipment should be prepared and potential surgical needs anticipated (e.g., implant, specific instrument). For senior pets, recovery times are improved with speed of the procedure and meticulous focus by the surgeon. Perioperative antibiotics and pain management should be provided if indicated. Postprocedural return to function is enhanced with appropriate analgesics, and physical therapy/rehabilitation may also lead to a more rapid return to function.

Dentistry

The *2019 AAHA Dental Care Guidelines for Dogs and Cats* provide a comprehensive supplement to this section of the Senior Care Guidelines.¹⁷ Senior pets may have an increased risk for oral cavity issues, such as periodontal disease and oral neoplasia. They should be assessed with a good oral examination, especially if the patient has trouble prehending or chewing or swallowing food or shows discomfort during the process. The oral cavity and pharynx should be thoroughly examined for the presence of periodontal disease, oral tumors, or dental disease (including broken or resorbing teeth). Examination of the oral cavity should be done at every veterinary visit. Videos taken by the client of unusual eating practices by the pet can help assess the problem.

The incidence of periodontal disease is increased in smaller and older dogs.¹⁸ Tiny and small senior dogs may have significant periodontal bone loss, which may result in pathologic fractures. Small senior pets may have a higher incidence of pathologic fracture in the mandibles, due to increased bone loss and less dense bone. The general systemic health of a senior may also be affected by the presence of a chronic inflammatory process such as periodontitis.¹⁹

TABLE 1**Diagnostic Tests and Recommended Frequencies for Senior Dogs and Cats**

Diagnostic Test	Recommended Frequency	
	Canine	Feline
Fecal testing for parasites	1–4 times/yr, depending on use of preventive products and lifestyle.	1–2 times/yr, depending on health and lifestyle factors.
Tick-borne disease	Annually	N/A
Heartworm	Annually	Detailed information on heartworm testing is available in the American Heartworm Society guidelines. ¹
Comprehensive CBC (including cell morphology, differentials and pathologist review if necessary)	Every 6–12 mo.	
Chemistry (TP, albumin, ALT, glucose, BUN, creatinine, sodium, potassium, calcium, SDMA if available)	Every 6–12 mo.	
Urinalysis (USG, sediment, glucose, ketones, bilirubin, protein, occult blood)	Every 6–12 mo.	
Imaging	Imaging of a region of interest should be performed if clinically indicated. Breed-specific screening may be appropriate.	Imaging of a region of interest should be performed if clinically indicated.
Electrocardiogram	Perform an electrocardiogram annually in breeds with high risk of cardiac disease (e.g., boxers, Dobermans), or in other patients when clinically indicated or if an arrhythmic condition is suspected.	
Urine protein:creatinine ratio	If proteinuria is identified or persistent microalbuminuria is present.	
Thyroxine (T4)	Recommended annually.	Strongly recommended annually.
Blood pressure	Recommended annually.	Strongly recommended annually. Recommended every 6–12 mo in healthy geriatric cats.
Retroviral testing	N/A	Consider based on individual patient's risk.
NT-proBNP	Annually and to be strongly considered before an anesthetic event.	

¹ American Heartworm Society. Prevention, Diagnosis, and Management of Heartworm (*Dirofilaria immitis*) Infection in Cats. American Heartworm Society, 2020. Available at https://d3ft8sckhnqim2.cloudfront.net/images/pdf/2020_AHS_Feline_Guidelines_Summary_11_12.pdf?1605556516

ALT: alanine aminotransferase

BUN: blood urea nitrogen

CBC: complete blood count

N/A: not applicable

NT-proBNP: N-terminal pro B-type natriuretic peptide

SDMA: symmetric dimethylarginine assay

TP: total protein

USG: urine specific gravity

Anesthesia is necessary to provide adequate oral and dental care for any canine or feline patient. Because of their advanced age and possible physiologic deficits, senior pets undergoing anesthesia should receive special attention as discussed in the preceding section on anesthesia.

Dental radiographs are recommended to assess the extent and pattern of bone loss and confirm appropriate extractions. Radiographs may uncover unanticipated dental or periodontal disease requiring additional treatment,^{20,21} but these procedures may need to be staged to avoid excessive length of procedures and time under anesthesia.

Periodontal disease incidence is lower in cats than in dogs. Senior cats are less likely to develop conditions such as feline chronic gingivostomatitis, more often seen in younger pets, but the presence of tooth resorption can cause discomfort and may require intervention.²²

Oral tumors are more common in older dogs and cats and may be large at the time of diagnosis because of the occult nature of cancer. Early detection is key to better outcomes. Diagnosis of the tumor type will help formulate a treatment plan, which may include, but is not limited to, en bloc excision, aggressive resection, radiation therapy, and adjuvant cytotoxic or immunotherapy. Cats tend to develop oral squamous cell carcinomas that may be located in the gingiva, tongue, or tonsils. Although locally very aggressive, these tumors tend to be slow to metastasize to the lymph nodes or other locations.²³ Dogs more commonly develop oral melanocytic tumors that behave aggressively locally and show higher rates of distant metastasis.²³

For more advanced or complex oral disease, consider a referral to a board-certified veterinary dentist. If referring a patient with complex disease is not possible, consider staging procedures to minimize anesthetic risk. Often, resolution of oral and dental issues in our senior dogs and cats can greatly improve their QOL, making the risks worth the benefits.

Nutrition

Diet and Body Condition

The 2021 AAHA Nutrition and Weight Management Guidelines for Dogs and Cats provide comprehensive recommendations for canine and feline nutritional management.²⁴ Senior pets may have changing energy and nutrition requirements and may experience muscle or overall weight loss due to changes in the senior body such as immunosenescence, inflammaging, or a disease process. Evaluation of muscle and body condition scores can help monitor normal aging and age-related disease changes and determine when nutritional adjustment may be needed. Maintenance energy requirements

(MER) generally decrease over a dog's lifetime. MER decrease in cats up to age 10, after which they start to increase.^{25–27} However, published data on the effects of age on energy requirements are extremely variable in cats. Calorie-restrictive diets have been shown to increase dogs' longevity,²⁸ with an ideal body condition score (BCS) of 4.5 to 5 out of 9. A cat's ideal BCS, up to 6 out of 9, can be associated with increased longevity, with underweight cats having greater morbidity and mortality risks.²⁹

Senior cats may be less able to digest and utilize nutrients. Decreased food digestibility may contribute to weight and muscle loss. Proteins are less digestible in 20% of cats older than 11 yr, and fats are less digestible in up to 33% of cats.³⁰ Food digestibility may be less of an issue with dogs.^{31,32} In a recent study, adding moisture to foods increased the digestibility of nutrients in senior dogs.³³

Reduced protein synthesis and increased turnover of proteins may contribute to the loss of lean body mass (LBM) in senior pets.³⁴ Sarcopenia is the anticipated loss of LBM with age, with up to 33% loss in cats from 10 to 15 yr of age.³⁰ Dogs tend to lose LBM and gain fat as seniors and incur overall weight loss with advanced age.³⁵ Senior pets, particularly cats, may need up to 50% more protein to improve or slow muscle loss.³⁴ Cachexia may also be present and refers to weight loss with excessive LBM loss due to severe or chronic disease, such as chronic kidney disease, heart disease, and neoplasia.

Senior pets may also develop obesity, which is more common in dogs. Increased BCS and obesity are known to affect mobility and contribute to inflammatory processes and diseases. Poor mobility and decreased activity are assessed in frailty scores and are associated with a shorter time to death.³⁶

Healthy Senior Nutrition

The Association of American Feed Control Officials does not currently have guidelines for senior nutrition. However, senior dogs have decreased MER and need less caloric density and more fiber to optimize BCS. A senior diet may include mild increases in protein content and quality to compensate for LBM loss.³⁷ Healthy senior cats may require higher-caloric-density, higher-protein diets with increased digestibility and enhanced palatability fed in smaller amounts more frequently to help them maintain adequate muscle and body weight.³⁴

Evaluating the Unhealthy Senior Pet

Senior pets are at greater risk for illness to occur in their final years, although the incidence and mortality for all diseases combined have shifted over time primarily due to improved preventive medicine measures, diagnostic advances, better nutrition, and greater access to veterinary health care.

Prevention and screening for chronic diseases are discussed in the section “Evaluating the Healthy Senior Pet” and can establish a baseline for healthy senior pet care. When disease does occur in senior pets, the history, physical examination, and diagnostic tools can help establish a diagnosis and determine a course for care. Interpreting diagnostic tests and reaching a clinical diagnosis should be congruent with clinical presentation, laboratory values, imaging, histopathology, and epidemiology.

Common clinical signs of chronic disease may include malaise, progressive lethargy, behavior changes, hyporexia, anorexia, altered thirst pattern, weight loss over time, mobility alterations, and nonhealing wounds. A suspected chronic disease can often be presumptively diagnosed based on the client’s account of the pet’s history and physical examination, although it is recommended to perform appropriate clinicopathological evaluations. The minimum database for a senior pet should include a detailed blood profile including thyroid panel and urinalysis. Additional screening or diagnostic tests may be used depending on the minimum database and may include thoracic, abdominal, and other imaging. Diagnostic approaches for senior dogs and cats based on body system are summarized in **Table 2, Diagnostic Approaches by Body System for Senior Dogs and Cats**.³⁸ This list is not exhaustive and additional diagnostic approaches may be warranted.

Unknown Diagnosis or Comorbidities

Senior pets may have several concurrent medical issues and associated clinical signs. These complex cases may be referred to an appropriate specialist. Alternatively, the client may opt for palliative care, and it may be helpful to have a trained palliative care veterinarian to consult with on the case.

There may be clients who do not wish to pursue diagnostics for a number of reasons, including the age of the pet, concern and fear of certain test procedures or outcomes, and financial constraints. If the client chooses to not pursue diagnostics or treatment, veterinarians should discuss the benefit of symptomatic treatment and how it can improve the pet’s QOL. This may encourage the client to access and continue palliative care. If the client chooses to seek additional diagnostics, then either performing them or seeking referral to a specialist may be indicated for complex comorbidities.

Managing Cognitive Dysfunction and Behavioral Anxiety

Canine and feline cognitive dysfunction (CCD/FCD) is an age-related neurodegenerative condition well described in dogs but less so in cats. Approximately 14–22.5% of dogs older than 8 yr suffer from age-related cognitive impairment.³⁹ Clinical signs of cognitive dysfunction vary between dogs and cats and may not be recognized

by clients in the earlier stages. Early recognition of this condition is crucial as treatment is more effective in the earlier stages of CCD, and this condition may significantly affect the quality of the human-animal bond.⁴⁰

The pathophysiology of CCD is similar to Alzheimer disease in people. Beta amyloid plaques are seen in both, most commonly as insoluble beta amyloid, but there are also soluble forms. In addition, Tau neurofibrillary tangles may play a role in FCD but do not appear to play a role in CCD. There are other structural abnormalities, such as blood vessel fibrosis, ventricular enlargement, cerebral atrophy, astroglia hypertrophy and hyperplasia, microhemorrhages, and intra-neuronal accumulation of several substances, including lipofuscin and ubiquitin. Mitochondrial dysfunction also plays a role.³⁹

The clinical signs for CCD may resemble other intracranial diseases. The acronym DISHAA has been historically used for the categories of clinical signs seen with cognitive dysfunction: **D**isorientation, alterations in social **I**nteractions, changes in **S**leep-wake cycles, loss of **H**ouse training and other learned behaviors, altered **A**ctivity levels, and increased **A**nxiety. In dogs, the most common clinical signs include daytime sleeping and nighttime restlessness, decreased interaction, disorientation at home, and anxiety. In a more recent study, it was found that visual impairment, smell disturbance, tremors, and falling down are associated with the diagnosis of CCD and may help clients and veterinarians recognize early CCD.⁴¹ Other clinical signs of note include lack of recognition of and interaction with familiar people and objects, loss of house training, losses in behavioral training, appetite changes, and compulsion or pacing.⁴¹ Clinical signs in cats are similar, although cats tend to have an increase in interaction and vocalization compared with dogs.⁴² Anxiety has been recognized as a significant component of this disorder that should not be overlooked.⁴³

Cognitive dysfunction may be a diagnosis of exclusion. A thorough history, physical examination, neurological examination, biochemical evaluation, and urinalysis are integral to ensure these animals do not have other underlying disease causing similar clinical signs. Neurological examination may be consistent with forebrain dysfunction, with evidence of dementia and compulsion. An MRI of the brain is recommended to rule out structural disease. Other differentials for similar behavior changes may include intracranial neoplasia, pain, and organ dysfunction.³⁹ Certain MRI changes are suggestive of cognitive dysfunction, such as reduction in mass of the interthalamic adhesion and cerebrocortical atrophy, although findings should be correlated with clinical signs.⁴⁴

To mitigate the underdiagnosis of cognitive dysfunction, specific and directed questions can be used as markers.^{40,42} Multiple questionnaires exist that can be used as both diagnostic and monitoring tools.^{45,46} These canine cognitive dysfunction/QOL questionnaires

TABLE 2

Diagnostic Approaches by Body System for Senior Dogs and Cats

Body System	Diagnostic Approach	Therapeutic Tip
<p>Integument</p>	<p>PE focus: Identify, describe, and map skin lesions, i.e., pruritis, alopecia. Do not forget nails, nail beds, and interdigital spaces.</p> <p>Baseline dermatology diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis • Skin scraping/impression cytology of any lesions • Dermatophyte testing if concerned about fungal disease • Measuring, mapping and aspiration of any growths • Other integument issues regarding nails, nail beds; ears may need different care • Evaluate for pain • For malignant conditions, consider thoracic and abdominal imaging as part of the clinical staging <p>The Guidelines task force encourages skin biopsy in senior pets presented with chronic dermatopathy if the baseline diagnostics are negative.</p> <p>Recommend referral to a specialist for chronic, progressive, or neoplastic cases.</p>	<ul style="list-style-type: none"> • Avoid steroid use if possible until a microscopic diagnosis is established. • Recognize that dermatologic issues may also have a pain component and should be treated for pain. • Use validated scales to monitor progression of treatment as appropriate.¹
<p>Oral</p>	<p>PE focus: Oral cavity, with particular focus on fractured, loose teeth, foreign bodies, oral ulcers, inflammation, masses. Make note of degree of dental disease and ability to prehend and swallow. Head and neck palpation.</p> <p>Baseline diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis <p>Additional diagnostic tests:</p> <ul style="list-style-type: none"> • Complete visual examination of the entire oral cavity with general anesthesia • Head and neck radiographs • Skull CT may be useful 	<ul style="list-style-type: none"> • Staging procedures is a viable plan.
<p>Hemolymphatic</p>	<p>PE focus: Mucous membrane color, capillary refill time, abdominal palpation, lymph node palpation.</p> <p>Baseline diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis • Lymph node aspiration if indicated <p>Additional diagnostic tests:</p> <ul style="list-style-type: none"> • CBC with pathology evaluation for cell morphology • Imaging to rule out secondary etiology for hematologic abnormality • Coagulation profile • Flow cytometry in select cases • Bone marrow aspirate 	

(continued)

TABLE 2

Continued

Body System	Diagnostic Approach	Therapeutic Tip
GI/Hepatic/ Biliary	<p>PE focus: Abdominal palpation, noting enlargement of organs, thickening, masses. Color of mucous membranes, skin (inner ear pinnae), conjunctiva, noting if jaundice present.</p> <p>Baseline diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis • Thoracic radiographs • Abdominal radiographs <p>Additional diagnostic considerations:</p> <ul style="list-style-type: none"> • Abdominal ultrasound <ul style="list-style-type: none"> • Tip: If ultrasound shows thickened muscularis layer, then laparoscopic or surgical biopsies appear to be more diagnostic. • Fecal sample examination • Rectal examination • Gastrointestinal panel • Bile acids • Endoscopy/colonoscopy 	<ul style="list-style-type: none"> • Enzymes or probiotics may be useful based on the individual patient. • Appetite stimulants and meat puree treats can be used for cats who are hyporexic or anorexic. • Recommend medication for nausea, as well as appetite stimulants as indicated.
Renal/ Urogenital	<p>PE focus: Evaluate muscle condition score, body condition score, size and shape of kidneys, propensity for crystal or stone formation, indications of neoplasia.</p> <p>Baseline renal diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis <ul style="list-style-type: none"> • Tip: Monitor and record early trends in SDMA, creatinine, and USG (making a chart of these indicators may be helpful) • If proteinuria present, UP:UC ratio • Blood pressure • Urine culture if indicated <ul style="list-style-type: none"> • Distinguish bacteriuria/pyuria from infection <p>For patients with renal disease identified with screening tests:</p> <ul style="list-style-type: none"> • Abdominal imaging (radiographs and ultrasound may both be useful; however, ultrasound may be preferred for a solitary test) • Monitor blood pressure more frequently in patients with chronic kidney disease • Continued monitoring of bloodwork, SDMA, BUN, creatinine • Continued monitoring for proteinuria <p>For patients identified with uroliths:</p> <ul style="list-style-type: none"> • Surgery may be indicated • Diet change may be indicated <p>For patients identified with neoplasia:</p> <ul style="list-style-type: none"> • Additional staging recommended • Referral to a veterinary oncologist should be considered 	<ul style="list-style-type: none"> • Maintaining hydration is imperative. • Provide daily fluid therapy for patients when indicated, recognizing this may be earlier for senior patients, and may include parenteral, subcutaneous, or intravenous fluid therapy. • Adopt an antimicrobial approach to urinary tract infections.² • Recognize renal failure may create pain and/or pruritis (this is recognized in humans).³

(continued)

TABLE 2

Continued

Body System	Diagnostic Approach	Therapeutic Tip
<p>Neurologic</p>	<p>PE focus: Full neurologic examination with checklist.^{4,5}</p> <p>Baseline diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis • Full neurologic examination <p>Additional diagnostic tests to consider:</p> <ul style="list-style-type: none"> • SOD-1 testing for degenerative myelopathy • MRI • DISHAA or other questionnaires for cognitive dysfunction syndrome⁶ • Ultrasound, chest radiograph <p>Diagnostic tips:</p> <ul style="list-style-type: none"> • Rule out syncope vs. seizure • Palpate axillae for pain from a nerve sheath tumor • Evaluate client video for all conditions • Evaluate toenail wear <p>Consider referral to a neurologist for further workup/MRI:</p> <ul style="list-style-type: none"> • Include any client video with referral materials 	<ul style="list-style-type: none"> • Use multimodal therapy.
<p>Endocrine</p>	<p>PE focus: General body appearance, palpation of thyroid, abdominal palpation, concern for hair loss, distended abdomen, redistribution of fat, and eye changes, including corneal, anterior chamber, lens, pressures, tear production, retina.</p> <p>Baseline diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis <p>Additional diagnostic tests to consider:</p> <ul style="list-style-type: none"> • Special hormonal assays depending on suspected disease • Regional imaging and advanced imaging with CT is often necessary <p>Additional testing for chronic disease:</p> <ul style="list-style-type: none"> • Hyperthyroid/Hypothyroid: Monitor T4, calcium levels • Hyperadrenocorticism: <ul style="list-style-type: none"> • ACTH stimulation test or low-dose dexamethasone suppression test • Monitor adrenal size with ultrasound • Hypoadrenocorticism: ACTH stimulation test • Diabetes: periodic or continuous glucose monitoring, fructosamine, urinalysis to monitor for ketones, urinary tract infection, hematuria • Hyperparathyroidism: Monitor calcium, phosphorus levels, urinalysis for urinary tract infection • Hypoparathyroidism: Monitor calcium levels 	<ul style="list-style-type: none"> • The FreeStyle Libre sensor can provide continuous monitoring for diabetic animals for up to 14 days (see the <i>2018 AAHA Diabetes Management Guidelines for Dogs and Cats</i>).⁷

(continued)

TABLE 2

Continued

Body System	Diagnostic Approach	Therapeutic Tip
Cardiac/ Respiratory	<p>PE focus: Auscultation of heart and lungs, identify normal and abnormal rhythm, breath sounds, muffled chest sounds, location of abnormality.</p> <p>Baseline cardiac/respiratory diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis • Thoracic radiographs • Echocardiogram • Blood pressure • NT-proBNP <p>Additional diagnostic considerations:</p> <ul style="list-style-type: none"> • Abdominal imaging if necessary • Respiratory: Infectious disease evaluation (PCR methods preferred) 	<ul style="list-style-type: none"> • Dogs with pacemakers often do well. • Consider working with a rehabilitation specialist for therapy options. • Owner education is key to therapeutic management.
Musculoskeletal	<p>PE focus: General body palpation with focus on spine, limbs, joints, muscular condition score, movement examination, full orthopedic examination, evaluation of pain level.</p> <p>Baseline diagnostic evaluation should include:</p> <ul style="list-style-type: none"> • Senior blood profile with urinalysis <p>Additional diagnostic tests:</p> <ul style="list-style-type: none"> • Regional radiographs • Arthrocentesis 	<ul style="list-style-type: none"> • Consider a diagnostic round of pain control. • Use multimodal pain management when possible. • Make recommendations for clients interested in using harnesses, slings, etc. • Encourage clients to video their pets when they are monitoring pain and mobility as this can provide valuable insight to guide treatment.

¹ Olivry T, Saridomichelakis M, Nuttall T, et al. Validation of the Canine Atopic Dermatitis Extent and Severity Index (CADESI)-4, a simplified severity scale for assessing skin lesions of atopic dermatitis in dogs. *Vet Dermatol.* 2014;25(2):77-e25. doi:10.1111/vde.12107

² See Frey E, Costin M, Granick J, Kornya M, Weese JS. 2022 AAFP/AAHA Antimicrobial Stewardship Guidelines. *J Am Anim Hosp Assoc.* 2022;58(4):1–5. doi:10.5326/1547-3317-58.4.1. Available at aaha.org/antimicrobials.

³ O'Connor NR, Corcoran AM. End-stage renal disease: symptom management and advance care planning [published correction appears in *Am Fam Physician.* 2012 May 15;85(10):950. Dosage error in article text]. *Am Fam Physician.* 2012;85(7):705–710.

⁴ Averill DR Jr. The neurologic examination. *Vet Clin North Am Small Anim Pract.* 1981;1(3):511–521. doi:10.1016/s0195-5616(81)50056-8

⁵ Chrisman C. Step-by-step: the neurologic examination. *Clinician's Brief.* May 2018. Available at <https://www.cliniciansbrief.com/article/step-step-neurologic-examination>.

⁶ O'Brian ML, Herron ME, Smith AM, Aarnes TK. Effects of a four-week group class created for dogs at least eight years of age on the development and progression of signs of cognitive dysfunction syndrome. *J Am Vet Med Assoc.* 2021;259(6):637–643. doi:10.2460/javma.259.6.637

⁷ Behrend E, Holford A, Lathan P, Rucinsky R, Schulman R. 2018 AAHA Diabetes Management Guidelines for Dogs and Cats. *J Am Anim Hosp Assoc.* 2018;54(1):1–21. doi:10.5326/JAAHA-MS-6822/

ACTH: adrenocorticotropic hormone

BUN: blood urea nitrogen

CBC: complete blood count

CT: computed tomography scan

NT-proBNP: N-terminal pro B-type natriuretic peptide

PCR: polymerase chain reaction

PE: physical examination

SDMA: symmetric dimethylarginine assay

SOD-1: superoxide dismutase

T4: thyroxine

UP:UC ratio: urine protein to creatinine ratio

USG: urine specific gravity

are to be completed by clients at set intervals. One scale, CADES (CAanine DEmentia Scale), is predictive of the progression of cognitive impairment.⁴⁷ Serial scores provided by clients and documented in the medical record can also be used as a tool for client education and to guide treatment.

Evidence suggests that management and treatment of cognitive dysfunction are most effective when started early, highlighting the importance of early recognition of cognitive impairment by the veterinary team. Although many therapies have been studied for the treatment of cognitive dysfunction, selegiline, a selective irreversible monoamine oxidase B inhibitor, is the only drug labeled for use for canine cognitive dysfunction. Selegiline is dosed at 0.5–1 mg/kg once a day OR every 24 hr. in the morning for 30 days, at which point the dose can be adjusted up to the next tablet size if there is no improvement at the lower dose. Selegiline is effective in up to 70% of dogs with cognitive dysfunction.⁴⁸ Toxicity can occur if selegiline is used in conjunction with other antidepressants, narcotics, phenylpropanolamine, or monoamine oxidase inhibitors. Newer treatments are being investigated and may be available in the future, such as a butyrylcholinesterase inhibitor.⁴⁹

Certain diets, especially those high in antioxidants and medium chain triglycerides, have also been posited for the treatment of this condition. These diets showed the most positive effect when combined with environmental enrichment (exercise, new toys, cognitive games, tasks, agility). The quality and rigor of the research associated with other various supplements, nutraceuticals, acupuncture, and diets is limited.^{39,50,51}

Anxiety is a clinical sign associated with CCD that may be directly treated. Anxiety has been recognized to significantly compromise the QOL of both the pet and family.⁴³ It is a complex syndrome and can also be related to chronic pain. Chronic pain-related anxiety is recognized in human cognitive dysfunction.⁵² The treatment of pain, along with anxiolytics and antidepressants for anxiety, should be considered in the cognitively impaired patient. Various anxiolytics and antidepressants can be considered.⁵³ Diazepam has been reported to exacerbate dementia signs in humans.⁵⁴ There are FDA-approved drugs licensed for dogs for noise phobia and separation anxiety (e.g., clomipramine) but not specifically for anxiety associated with CCD. Shorter-acting drugs such as trazodone and alprazolam are preferred by the task force because of their rapid onset and clearance from the body, as well as their very limited side-effect profile.

Pain Management

Identifying, preventing, and minimizing pain are essential in the senior patient. The *2022 AAHA Pain Management Guidelines for Dogs and Cats* and the *2021 AAFP Feline Senior Care Guidelines*

outline specific, comprehensive recommendations for pain assessment and management.^{3,12}

Clients often perceive changes in their geriatric pets as normal aging when it may be the result of clinical chronic pain. Clients may not perceive that changes in behavior or in vital signs can indicate pain, especially when chronic pain behavior changes may be subtle. Educating clients about how to recognize and monitor acute and chronic pain should be paramount for the veterinary team. Clients can take videos of their animal moving and interacting with their environment. Videos are useful for the client and the practitioner to evaluate changes in movement and can be used to monitor responses to medications and therapies. This may help large-breed dogs with degenerative joint disease and cats who, owing to subtle changes in behavior, may not have their chronic pain recognized.⁵⁵

Treatment options for managing pain and mobility must be integrative and multimodal. Addressing these issues early in the course of the disease improves outcome. Pain management may include the use of pharmaceuticals, nutraceuticals, herbals, weight management, acupuncture, physical modalities, and environmental modifications. Senior pets with chronic musculoskeletal disease may also benefit from physical rehabilitation. Rehabilitation is an excellent option for assisting with pain management and increasing mobility and balance. Rehabilitation may use different therapies to reduce pain and increase the QOL, including exercise therapy, hydrotherapy, acupuncture, manual therapy, and modalities such as photobiomodulation therapy, extracorporeal shock wave therapy, and pulsed electromagnetic field therapy.⁵⁵

Counseling clients on home modification and pet accessories to increase the mobility and QOL of the pet may include appropriate use of ramps, suitable placement and design of litter boxes, elevation of food and water bowls, use of rugs or yoga mats to provide better footing, fitted and padded harnesses to aid with lifting larger pets, toe grips, boots, and socks for foot stability, medical pet shirts for anxiety, and the use of appropriate beds. As senior pets may have limited vision or hearing, identifying potential hazards in the home and yard such as stairs or pools should be included when discussing senior care with clients.

Special Disease Consideration: GOLPP Complex

Environmental changes may be helpful for dogs who have developed GOLPP complex, which has been increasingly recognized in geriatric large-breed dogs (Labrador retrievers and associated breeds). This condition causes degeneration of long nerves in the body, particularly the laryngeal and sciatic nerves, causing laryngeal paralysis and weakness of the pelvic limbs with conscious proprioception deficits. Clinical signs include exercise intolerance, upper airway stridor,

weakness, and sarcopenia. Comorbidities may include osteoarthritis and secondary musculoskeletal pain. Treatment may include maintaining QOL with laryngeal tie-back surgery and physical therapy to preserve muscle mass. Pain management should be included in the treatment plan.⁵⁶ Clients should be counseled that heat stroke may be a complication in this subgroup of patients.⁵⁷

Disease Management: Nutritional

Changes to nutrition may be useful in the management of disease for the senior dog or cat and have been used for conditions such as hyperthyroidism, chronic kidney disease, osteoarthritis, and diabetes mellitus. Different ingredients in a balanced diet may be used to treat or manage a chronic disease; for example, adding antioxidants to the diet of dogs and cats may help manage conditions such as cognitive dysfunction syndrome, immunosenescence, osteoarthritis, and heart disease.^{58–60} Long-chain omega-3 polyunsaturated fatty acids have been shown to have synovial anti-inflammatory effects in osteoarthritis,^{61–64} and medium-chain triglycerides have been recommended for cognitive dysfunction syndrome.⁶⁵ For cats with diabetes mellitus, treating for issues such as obesity and inactivity is known to be beneficial to managing the disease. A dietary change to a high-protein (>45% on dry-weight basis) and low-carbohydrate (<15%) diet given in small frequent meals may help minimize postprandial glucose influx.⁶⁶

For patients with renal disease, studies have shown that a renal diet with restrictive protein provides longer survival times with fewer uremic crises for patients.⁶⁷ IRIS currently recommends phosphorus control with a reduction in intake and addition of binders.⁶⁸ At IRIS stage 2, the addition of long-chain omega-3 polyunsaturated fatty acids is suggested. Healthy pets and early renal cases should not require protein restriction, and quality and quantity should be carefully managed in later IRIS stages. Protein restriction is to be considered at IRIS stage 2 and recommended at IRIS stage 3.

For cats with hyperthyroidism, clinical concerns include weight loss and LBM loss, and a high-protein (>40%), limited-carbohydrate (<25%) diet while restricting iodine is recommended.^{66,69} Fish-based diets should be avoided. Dogs that have developed hypothyroidism may require a diet that has restricted calories.

Palliative care patients may be hyporexic or anorexic. Focus may need to be shifted from a balanced diet to just getting the animal to eat something. For palliative patients that are anorexic, enteral or parenteral feeding (e.g., esophagostomy or percutaneous endoscopic gastrostomy tubes to reduce food aversion) should be discussed with the client. Feeding tubes can also be beneficial for giving parenteral medication, the amount of which may be substantial in the end-of-life patient. Appetite stimulants, medication for nausea and vomiting, and careful fluid administration should be provided

for hyporexic or anorexic patients.⁷⁰ Resumption of favorite foods, even if not medically balanced, may provide some nutrition with a more positive experience for both the caregiver and patient.

End of Life and Euthanasia

The 2016 AAHA/IAAHPC *End-of-Life Care Guidelines* provide detailed recommendations for maximizing patient comfort and minimizing suffering while providing a collaborative and supportive partnership with the caregiver client.⁷¹ For many clients, as their senior pet develops chronic progressive disease or a terminal illness, the events and veterinary care surrounding their pet's final life stage are significant.

Palliative Care or Hospice?

The option of palliative care should be offered to the client when there is a chronic, progressive, or terminal diagnosis. Palliative care consists of symptom and pain management that can be provided along with curative treatment. Palliative care develops a plan and provides guidance for the family in symptom and disease management, pain management, and physical or rehabilitation therapy, which helps minimize the suffering of patients regardless of life stage.

If a client is facing an end-of-life decision for their pet, hospice, which is the end stage of palliative care, can be considered.⁷² Hospice provides services in addition to palliative care to later-stage, terminally ill patients and their families, such as planning for the decline of the pet with their particular disease, dealing with a crisis that may arise, and how the family would like the animal to die, such as by euthanasia or a palliated death from their disease. Regardless of the disease stage, the clients are empowered to care for their pet, spend quality time with their pet, and deal with anticipatory grief.

For palliative or hospice pets and their families, discussing disease trajectories and the clinical signs of approaching and imminent death is important. A daily and crisis plan should be developed with the goals of providing ongoing care for the patient and support for the family. Finally, a discussion of the plan for death, whether it be euthanasia or palliated death, is needed. If a palliated death is chosen, the use of palliative sedation should be discussed. If euthanasia is the choice, the options could be presented at the initial consultation and further discussed in future follow-up appointments. Clients may opt for a home euthanasia service as these have become more readily available.

The Initial Appointment

The initial palliative appointment should occur early in the course of the disease. There is research on the human side of palliative care that indicates starting early increases the quality and the quantity of life.⁷³ Palliative care may be basic, such as symptom management, to advanced level care, including multiple comorbidities and more

advanced pain and symptom management. The introductory end-of-life appointments may be longer than the average appointment, with some palliative practitioners using up to 3 hr for a single appointment. Listening to clients about their goals, fears, and worries and then educating them about end-of-life care takes time. It is key to defining the client's goals of care and maximizing the QOL of the patient. Compassionate, advanced serious disease communication may reduce the likelihood of premature or difficult euthanasia events.

The palliative appointment may begin with an in-depth conversation around the client's understanding of the history, diagnosis, and current medications of their pet and then develop a plan based on the client's goals of care. After a thorough discussion regarding history, a complete physical examination with pain assessment would be the next step. After that, the diagnosis, prognosis, and clinical outcomes of chronic disease or end-stage organ dysfunction can be discussed. A plan can then be developed based on the client's goals of care and may proceed to a discussion of palliative care, hospice, or humane euthanasia options. Veterinarians may explore a client's fears, beliefs, and physical abilities necessary to be an effective caregiver. The clinician and client may use different tools to determine goals of care, and what the pet will or can tolerate may influence end-of-life decisions.

Tools for End-of-Life Care

Equipping clients with tools to use to evaluate their pet, such as validated pain scales, validated QOL scales, advanced directives, and clinical signs of imminent death, may help the client with their goals of care. QOL is a subjective perception and may be unique to the client and influenced by the bond they share with the pet. However, using a validated QOL scale may help the client have a more objective view of their pet's condition. As of this writing, there are very few validated QOL scales for the animal patient. Most QOL scales found online are not currently validated.⁷⁴ Clients may also track good versus bad days on a calendar or journal to get a more objective and accurate view of changes. There are now apps that may also be useful in tracking changes like respiratory rate.

Checking In

Clients may need additional time to process the initial conversation, and further discussion may need to occur at a different time. If a client seems overwhelmed with information, schedule another time to continue the discussion. Veterinarians that have an open approach to the conversation, acknowledge the client's goals or ideas, and balance the discussion with QOL may develop a deeper connection with the client, improving client compliance.

Limitations on Palliative Care

The veterinarian should also recognize the limitations of the client in providing nursing care for their pet. In addition, having a frank discussion about the financial, physical, emotional, and time implications of different end-of-life care options may help the client come to a collaborative decision regarding end of life and their choice regarding euthanasia. Advanced age is not the only criterion for making medical decisions and does not preclude surgeries or other significant medical interventions depending on the goals of the client and the condition of the patient. Clinical scenarios that may affect QOL and influence decision making for the client may include anorexia, symptom progression, severe or unrelenting chronic pain, deterioration of a condition during active treatment, persistent cough even at rest, cognitive dysfunction progression, and mobility issues.

The Veterinary Team in End-of-Life Care

The veterinary team can guide clients to decisions by advocating for both the senior pet and client. The veterinary team includes the veterinarian, credentialed technicians, veterinary assistants, and client service representatives. Additional team members that may help with end-of-life care can include mental health professionals and grief counselors, pharmacies, compounding pharmacies, groomers, pet sitters, respite workers, spiritual leaders, and end-of-life care specialists. Although the client is generally the best advocate for the pet, veterinary teams may help guide them toward the best decision for both the pet and family. Making a decision for a beloved pet is complex, and empathy and understanding on the part of the veterinary team to support the client's psychological, spiritual, and emotional beliefs is optimal.

Veterinarians and other clinical staff may experience physical or compassion fatigue when dealing with patients with multiple medical concerns or undiagnosed diseases. Maintaining a positive outlook, such as a combination of celebrating senior pets and sharing successes with clients and team members, may help boost morale for everyone involved in the care of the pet.

Clients can also experience fatigue, which can be minimized or prevented with activities such as creating a joy-of-living list, creating a bucket list, setting up pet dates, and maintaining the sacred human-animal bond that emphasizes QOL for the pet and their families.

Making Senior Patients a Practice Priority

Senior pets make up 44% of the pet population. This demographic should encourage veterinary practices to expand their focus on the senior pet and their family. There are several ways practices can encourage families to bring their senior pets into the clinic and a vast number of tools that can be implemented in the clinic to make sure it is a safe and enjoyable visit for all involved. Creating a senior-friendly

hospital may include changing or adding senior-friendly flooring, using pheromones, developing questionnaires and checklists specifically for senior pets, scheduling longer appointment times, developing Senior Care Kits, and expanding end-of-life care tools and practices.

Creating a Senior-Friendly Hospital

Creating a Senior Pet Champions team that develops senior care standard operating procedures and is proactive in identifying areas for improving the senior care experience can create a practice culture that emphasizes optimum care for older pets. This approach will not only inspire more families to bring their senior pets to your practice but also ensure these patients are treated with the best care possible.

Evaluating the Physical Space for Senior Patients

When developing a plan for a senior-friendly hospital, consider the physical components of the clinic that may be a challenge to the aging pet. Is the pet able to walk up to and into the building easily? Do the floors support senior pets? Are the senior cats kept in a calm area away from dogs, and are they able to be comfortable during their visit? What is the noise level in the lobby, examination rooms, and treatment area?

The exterior of the veterinary practice should be examined, including the parking lot, for obstacles the senior pet may need to overcome. For example, are there a few steps (or a curb) to climb to get to the entrance? Even one step up may be a struggle for an older dog, and installing appropriate ramps can increase ease of access to the front door of the practice. Flooring in the lobby, examination rooms, and treatment area should also be assessed, and, if necessary, bathmats or yoga mats can be used to accommodate the senior pet. Consider covering scales and tables with similar mats so that the older dog or cat will have better grip and feel more comfortable. Senior pets may have noise and light sensitivities, and adjusting lighting and installing noise dampening tiles for walls could help. Pheromone sprays in the examination rooms and the lobby may also help to relax anxious animals.

Senior pets who require treatment or hospitalization require good traction in the kennels and cages, additional padding in the recovery areas, decreased stress handling, sufficient warmth, and minimal noise in treatment and surgical recovery areas.

Planning for the Senior Pet's Appointment

Providing a senior pet owner a questionnaire to fill out before a visit can help clients focus on behavior and note changes they may be seeing with their senior pet. When a family schedules an appointment, provide a species-specific senior pet questionnaire. Instructions on taking video of pets can be included, and clients can be asked to take pictures and videos displaying mobility and any abnormal behavior

seen at home. In addition, images of the pet's food and water area and sleeping environment may also be helpful.

When booking the appointment, enough time must be allocated for the veterinarian to properly give a thorough examination and assessment of the pet. Extra time will be needed to discuss disease conditions, environmental adjustment suggestions, medical therapies, and family goals for the patient. It is helpful to also include a discussion about the progression of the ailments and diseases the family is managing. This will help establish expectations early in the senior care process and assist with decision making later.

At the conclusion of the appointment, the client should be given handouts with detailed information that may include diagnosed disease(s), details on medications dispensed (or recommended), and specific product recommendations and recommendations for follow-up care. The veterinary team should actively educate the client to avoid dismissing certain age-related changes as merely "old age," a catch-all phrase that inadequately addresses the specific and often treatable conditions affecting the senior dog or cat.

Avoid just discussing the need for biannual diagnostics to uncover hidden diseases with clients. Instead, focus on all the expert care, ideas, and support the hospital will provide to ensure their senior pet's quality and quantity of life. After each healthcare visit, provide the client with patient-specific written information and instructions because appointments can sometimes involve information overload.

Senior Care Kits

Many clinics have puppy or kitten kits available for new pet families but do not offer a Senior Care Kit for families of the senior patient. A client with a senior pet may have as many issues and questions as someone with a new puppy or kitten. To create a Senior Care Kit for both dogs and cats, consider the following contents:

- Customized healthcare and product recommendations
- Information on common senior pet diseases, such as chronic kidney disease, congestive heart failure, neoplasia, cognitive dysfunction, mobility changes, and chronic pain
- Medication information for their pet's prescriptions, including dispensing instructions, pill-giving tips, and side effects to watch for
- Information on chronic versus acute pain recognition and detection (include visual aid of the practice's preferred validated chronic and acute pain scales)
- Specific nutritional recommendations for their pet, including visual information about body condition score and muscle condition score
- Cognitive dysfunction questionnaire
- Tumor/skin maps
- Changes that clients could make in their home, which may include elevating food bowls, keeping pets safe with barriers and gates, alerts or alarms in areas where they can get into trouble (e.g., pools and stairs), yoga mats and carpet runners, ramps, and bedding in accessible areas

- Changes that can help with mobility: toe grips and boots, harnesses for mobility, relocating a dog's play or resting area closer to the door, and lower litter boxes for cats
- Changes to decrease stress in the home: use of pheromone sprays, temperature control, access to sunlight, nightlights, sound machines, and front door signs to ask guests not to ring the doorbell
- Bucket and joys-of-living lists
- Checklist of local senior-friendly/recommended pet sitters, gentle groomers, daycare and boarding facilities, and local and online support groups
- Validated QOL assessments and scale
- Information about caregiver burden and caregiver support resources
- Anticipatory grief, pet loss, and grief information, including a crisis phone number and website
- Veterinary palliative care and hospice information

A Senior Care Kit will help clients support their senior pet and improve QOL. Other useful tools could include encouraging clients to take pictures and videos of their pets within a specified time (i.e., daily, weekly, or monthly) to help the client and the veterinarian track body condition changes, mobility, joyful activities, and other behaviors associated with the senior life stage. Having clients see these changes over time will help them better assess QOL as the pet's disease progresses.

It is helpful to provide families of older pets with a checklist of what to look for (and what to avoid) regarding appropriate pet sitters, pet loss support groups, gentle groomers, senior hotels, and boarding facilities (e.g., in-home boarding staff who can administer medications to the pet). If the primary caregiver is going to be out of town or unavailable, the client should have a letter given to the pet sitter that includes a phone number for the client; the time zone they will be in; who the pet sitter is and an authorization for them to make decisions; how the client is going to pay for any services rendered in case of emergency; and a designated family member, friend, or other representative who is authorized to make healthcare decisions for the pet.

Keep in mind that not all clients are able to come into the clinic. It may be a good idea to have the essential senior care resources, tools, and information readily available on your website.

Promoting Senior Care in the Veterinary Practice

Practices with a focus on senior care can promote their expertise through their practice website and social media. Topics can include mobility issues, cognition changes, chronic pain, elimination behavior and incontinence, and changes in hearing and vision. Information on common diseases that clients may see in their senior pet, along with the common clinical signs, could be provided on the website or social media. Home tips, product recommendations, videos, and pictures of what the chronic or terminal disease might look like and when to visit the veterinarian may also be added.

The hospital website should promote what the practice does differently for senior pets. For example, longer appointments, special

flooring, and assistance with getting the pet in and out of the car are all valued services the practice can add to the senior care experience. Videos of the changes the hospital has made to become senior friendly may also be a good addition to the website. An end-of-life care section can be developed that may include a QOL assessment, pain management with validated tools, information about caregiver burden, and pet loss and grief resources. Clinic websites often focus on puppy and kitten pictures—a practice can stand out as senior friendly by ensuring that senior pets make up at least 30% of the visual content of the hospital's website.

Managing the Caregiver Burden

Caring for a senior pet takes time, patience, money, and emotional and often physical stamina. It can take an emotional and physical toll on the caregivers and lead to caregiver burden. Practices can support clients by developing an education program on caregiver burden. The hospital may alleviate some of the load by helping the client in several ways—for example, providing a Senior Care Kit with lists of people who may be able to provide pet sitting or respite care, offering options for medications that are easier to administer (e.g., using compounding pharmacies to create palatable medications), providing a veterinary technician or assistant to help with the daily care of the pet, and, in some cases, limiting medical treatment to what is essential.

Conflicts in the home regarding the pet's behavioral changes, financial constraints, emotional guilt, stress, or disputes with partners or family regarding care of the pet may add to the caregiver burden. Providing information on coping mechanisms to caregivers, including resources for accessing mental health professionals, social workers, counselors, and psychologists, in Senior Care Kits can be helpful. Honesty and openness about the care that may be required for the senior patient currently and in the future is paramount. Developing a plan together with the client that recognizes and works within their limitations is the best course of action for limiting caregiver burden. For example, if the dog is panting and pacing all night, suggesting a dental cleaning may not be the best thing to focus on—even if it is the most medically relevant issue to treat. Alleviating sleep disturbances first may relieve caregiver stress and then allow the client to focus on other medical concerns.

Communicating with Families of Senior Pets

Families with senior pets may come into the examination visit with differing goals and beliefs. Getting people on the same path may take some work. Interactions with each individual in the family may mean longer appointment times to hear out different perspectives and work on empathizing with and validating their feelings. Senior pets may have a long list of issues that can complicate the visit.

Developing tools to start a conversation among the family members that centers the needs of the pet and takes their concerns into account is a good place to start.

News of a declining condition or serious illness is common in geriatric medicine, so careful use of communication is essential. How the patient's condition is explained and the goals of care are established with the client may have a great impact on the animal's care and the client's experience. Listening to the client's understanding of the condition and eliciting how much detail they prefer can be established before continuing the conversation. Be aware of unintended bias in these discussions.

Clients may have many questions. For example, they may want to know if there was a cause of the illness, how serious it is, and what are the expected outcomes in the short and long term. Studies have shown that truth is important, delivered clearly with compassion and without judgment.⁷⁵ Use a comfortable area in the practice free from distractions to maintain focus on the interaction. Information should be given in bits with pauses to assess the client's understanding before moving on to the next topic. Visuals or links to written materials may be offered to the client for them to refer to later, especially in situations in which emotions may hinder information processing. Providing them with a plan for follow-up questions and resources may be necessary.⁷⁵

When there is a large amount of information to convey to a client, grouping it into categories aids recall. For example, "The four main goals of our therapy are to (1) reduce pain, (2) increase mobility, (3) get to a healthy weight, and (4) help you two enjoy those walks on the nature path again." Tailoring information to the unique situation of the client and pet is important.⁷⁶

Work with the client to prioritize medications by importance and anticipate dosing challenges or missed doses. Involve the client in problem solving and developing a mutually acceptable plan. This is another opportunity to identify what medications or nutraceuticals are being given and to call attention to possible adverse effects if administered concurrently with prescribed medications. When dispensing medications, make sure the names of the medications are discussed along with the benefits, expected outcomes, and potential side effects. Repeat and summarize the medical recommendations, and then check to confirm that the caregiver agrees with the plan and questions have been addressed. Finally, schedule a follow-up time to check in and re-evaluate how the medications are working and how the client and pet are adjusting to the new plan.

Using Telehealth and Telemedicine Technologies

Veterinary practices are increasingly using online technologies to gather and disseminate patient information. These developments have encouraged innovations that can enhance care, increase efficiency, and expand access. Familiarization with the definitions and types of technological medicine and adherence to state, province, and national practice, licensure, and pharmacy law is essential. Many states require an in-person veterinarian-client-patient relationship to be established first. The practice should ascertain security issues, protect client privacy, and allow for secure transactions. Notes and record keeping must be maintained as required by law. Check with your liability carrier to ensure coverage on planned activities.

The 2021 AAHA-AVMA Telehealth Guidelines for Small Animal Practice provide a detailed resource for implementing telehealth services in a veterinary practice.⁷⁷ The components of an effective

Home Tips for Clients Caring for Senior Pets

- Provide regular gentle grooming and nail care
- Consider having a mobile groomer for home grooming to minimize stress
- Keep pets clean and dry at all times, including fur, skin, and bedding
- Provide good bedding that is adequately padded
- Cover slippery floors with secure rugs and mats for traction
- Pets with decreased mobility need additional nursing care, including being walked or turned every few hours
- Monitor skin for redness, rashes, swelling
- Keep flies, fleas, and ticks off the senior pet
- For pets with incontinence issues:
 - Minimize use of diapers to avoid secondary infections
 - Use disposable or washable waterproof covers for bedding (fleece or mesh)
 - Keep patient groomed and/or fur trimmed, particularly on the back legs, tail, and around the vulva, penis, and anus
 - Use baby wipes or medicated wipes to keep patient clean in between bathing

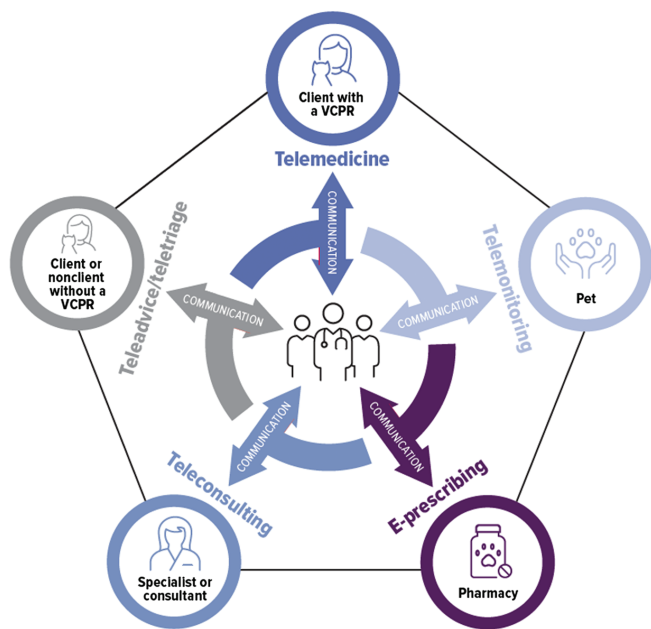


FIGURE 1
Components of Telehealth in Small-Animal Practice

telehealth component in companion animal practice are shown in **Figure 1, Components of Telehealth in Small-Animal Practice.**

Telehealth can be especially helpful for the senior patient by increasing access to care in situations where caregivers may have disabilities, challenges with transportation or time off from work, or home care obligations or need consultations with specialists. The senior pet that is difficult to transport, anxious, painful, or fragile may be examined in less time and for less risk using telehealth resources. For the practice, telemedicine care can save time and expense, decrease appointment congestion, and improve workflow and ultimately work-life balance. Some practices allow clinicians to use a work-from-home option, which may expand hours and use a fee-for-service arrangement.

Having high-quality rechecks more frequently can improve patient outcomes by assessing response to therapy, progression of signs, healing of lesions, and any barriers to adherence. Access to current electronic patient data can facilitate better discussion, communication, and cooperation between those involved in the care.⁷⁸

Video appointments may be used to gather background information before a clinical procedure or for a follow-up visit, especially with palliative or hospice care. The patient can be featured on camera to allow assessment of progress in pain control, movement, or wound healing. Often home environments allow a truer picture of the animal's behavior.

Telemedicine examinations require planning to ensure compliance with state practice acts and optimal capture of accurate

diagnostic information. Clinicians should always be mindful of the limits of telemedicine and provide informed consent for pet owners. Challenges may arise with the quality of images, the accuracy of the description of the concern, missed symptoms or physical cues, and diagnosis without diagnostic testing. Breaches of privacy, ransomware, or malfunctions are additional concerns.⁷⁹ Clarity on the scope of care should be addressed with the caregiver during the visit, along with advice to follow up in person as needed.

Teleconsultation with specialists can aid patient care when specialty practices are hard to access. Check with your practice act regarding advice obtained from a veterinarian from out of state. Reports and information also may be transmitted by photo, audio, or recorded video methods. Clients may become more engaged in care with this real-time information and be more attuned to significant changes.

Pet wearable technology is rapidly expanding and may allow real-time monitoring of the senior pet. Smartphone apps that monitor pet health and activity are being developed and may further transform practice. Frequent inputs of blood glucose, weight, or cardiac abnormalities may enhance understanding of the patient's condition and allow for improved treatment outcomes. Pain management may be improved with future artificial intelligence apps that can assess pain expressions and other aspects of movement. However, it is important to note that telehealth and telemedicine innovations are intended to augment, but not replace, in-person care.

Educating the Veterinary Team

Education of the veterinary team is vital if the practice wishes to provide the best possible senior care. Aging pets often require special nursing care because of changes in both physical and mental abilities. If the healthcare team can recognize and address health issues that can influence the course of treatment, disease management, patient care, and outcomes will improve.

Formal training for the veterinary team should involve education on the process of aging, senior pet-friendly techniques, and modification of the clinic environment to suit the needs of the pet. If the staff understands that senior pets may be frail, both physically and mentally, simple actions such as prolonging appointment times for senior pets or offering gentle holding techniques can be beneficial for the pet and the client. If the team understands the aging process, then they are better able to counsel the client on how to manage their pets. Every team member should be familiar with the common symptoms of aging and invest time in learning how these changes will affect their patients. Low-stress handling and providing more comfort measures for the senior pet are important in relieving anxiety and making senior visits safe and rewarding for the caregiver and patient alike.^{80,81}

The veterinary team should be aware of other methods for optimum senior pet care, including:

- Examination rooms can be repurposed into senior care rooms with the addition of yoga mats to prevent slippage; cushions and low beds for physical comfort; and natural light, soft music, and appropriate pheromone scents for the patients to relieve anxiety, soothe the patient and the caregiver, and help to relieve pain.
- The use of a senior pet questionnaire can help to prioritize the goals of the caregiver as well as the veterinary focus for the examination.
- The senior care room should contain materials about caring for senior pets that can be quickly and easily shared with the caregiver.
- Treating larger patients on the floor and performing most tasks and sample collections in the room in the presence of the caregiver can ease anxiety and increase comfort.
- If the patient requires hospitalization, ensure comfort and safety for the duration of the hospital stay. Mesh beds can be used to keep incontinent pets dry, and warm blankets and items from home can comfort hospitalized seniors.
- Updating the caregiver regularly on the status of the patient helps build trust and reduce anxiety for the client.⁸⁰

The caregiver-pet bond is unique to all animals, and veterinary teams should recognize that this bond means different things to different people. Practitioners should work with clients to make sure the animal is not suffering, as sometimes families have difficulty letting go of a pet at the end of life. Teams should be educated on how to recognize and anticipate bereavement and grief. Support should be provided for team members who work in emotionally charged situations and may feel overtaxed or take on the pain clients are feeling. Veterinary team members should be encouraged to seek help when needed.⁸⁰

Summary

All companion animal practices should ascribe special status to the senior patient because these clients usually have a very strong, long-term relationship with their pets. Many families of senior pets place an intrinsic value on their animals as personal companions and family members. Senior pet care presents an opportunity for a practice to implement optimum and individualized healthcare for its geriatric patient population.

The onset of the senior life stage differs somewhat for dogs and cats and within breeds for both species. A thorough diagnostic assessment as described in the Guidelines will help the practitioner determine the specific needs of the senior pet. The senior pet's healthcare plan can then be differentiated into evidence-guided protocols for the healthy and unhealthy patient. Using this approach, senior pet care becomes a carefully staged healthcare plan designed to preserve and extend the patient's QOL and maintain a strong, active relationship between the pet and family. Practices that adopt a proactive senior pet health care philosophy can educate clients that the aging process is not an inevitable physical, mental, and behavioral decline that warrants minimal medical intervention.

Practices that successfully emphasize senior pet wellness should focus on two aspects of the practice's culture—team training to promote senior pet care and client education to explain the practice's healthcare recommendations for the senior pet. When both the practice team and the practice's clients understand the goals for senior pet care, successfully implementing an effective healthcare program for older pets is all but ensured. ■

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