

The Rational Use of Screening Tests in Senior Wellness Programs

Preventive care for veterinary patients plays an important role in enhancing quality and length of life.

The American Animal Hospital Association (AAHA) and American Association of Feline Practitioners (AAFP) have provided guidelines for the care of senior animals that include use of screening tests (Tables 1 and 2).


INDICATIONS

A screening test identifies a medical condition or disease process in an animal that has no clinical signs of the disease in question. This allows early intervention and management that can reduce morbidity and mortality. In human medicine, several criteria are considered before performing a screening test, including whether:

- The disease is prevalent and has a detectable preclinical phase
- The disease would have serious consequences if left undiagnosed
- Early treatment or management of the disease has been shown to be effective in reducing morbidity or mortality
- The test has high sensitivity for the disease
- The test has a low rate of associated morbidity
- The test is cost-effective.

ADVANTAGES

Screening tests allow early intervention in certain diseases and medical conditions, which may improve the quality and/or length of a pet’s life. They do not, however, replace a thorough and complete history and physical examination.

 Table 1. AAHA Senior Care Guidelines Minimum Laboratory Database for Healthy-Appearing Senior Pets	
Baseline Tests	Possible Additional Tests*
<ul style="list-style-type: none"> • Complete blood count • Culture and sensitivity, if indicated • Fecal analysis • Serum biochemical profile <ul style="list-style-type: none"> - Alanine aminotransferase - Albumin - Alkaline phosphatase - Bilirubin - Blood urea nitrogen - Creatinine - Glucose - Potassium (cat) - Total calcium - Total protein • Total thyroxine (cat) • Urinalysis, including sediment examination 	<p>Laboratory Tests</p> <ul style="list-style-type: none"> • Cholesterol, triglycerides • FeLV/FIV • Heartworm • Microalbuminuria • Serum electrolytes • Urine protein:creatinine ratio <p>Other Assessments</p> <ul style="list-style-type: none"> • Arterial blood pressure • Echocardiography • Electrocardiography • Radiography • Schirmer’s tear test • Tonometry • Ultrasonography

*Might be indicated based on initial history, examination, and laboratory results; testing is not limited to these

FeLV = feline leukemia virus; FIV = feline immunodeficiency virus

Adapted from AAHA Senior Care Guidelines for Dogs and Cats; Epstein M, Kuehn NF, Landberg G, et al; JAAHA 41:81, 2005; with permission from the American Animal Hospital Association.

CONTINUES

**Table 2. AAFP Senior Care Guidelines
Minimum Database for Healthy-Appearing Senior Cats**

	Mature Cats (7–10 years)	Senior/Geriatric Cats (> 10 years)
Complete blood count	+	+
Serum biochemical profile*	+	+
Urinalysis, including sediment exam	+	+
Total thyroxine	+/-	+
Blood pressure	+/-	+

*As a minimum include total protein, albumin, globulin, alkaline phosphatase, alanine aminotransferase, glucose, blood urea nitrogen, creatinine, potassium, sodium, and calcium

Adapted from *American Association of Feline Practitioners Senior Care Guidelines*; Pittari J, Rodan I, Beekman G, et al; *J Fel Med Surg* 11:763-778, 2009; with permission from Elsevier.



WHAT'S SENIOR?

The AAHA guidelines define middle age as 7 to 8 years for most dogs and senior age as those in their last 25% of predicted lifespan. The AAFP defines a middle-aged cat as 7 to 10 years, a senior cat as 11 to 14 years, and a geriatric cat as one over 15 years.

Veterinary patients are adept at hiding problems until they are in advanced stages of illness. Unfortunately, these changes may be subtle and difficult for owners to observe and communicate to the veterinarian. Thus, screening tests in “apparently” healthy animals can be quite valuable. In addition, screening tests provide baseline information on normality for a specific patient and allow the clinician to evaluate trends instead of absolute values.

Screening tests also increase client awareness about potential health problems and emphasize the importance of routine preventive care, thus promoting the human–animal bond.

DISADVANTAGES

Although screening tests are extremely useful for detecting chronic, insidious disease, they are frequently incapable of detecting acute disease processes. For instance, if a patient displays signs of a disease 2 weeks after a wellness screen, its owner may question the test’s value.

In addition, while screening tests may identify disease processes, management may not necessarily affect the overall quality or length of a patient’s life but may add to owner costs and emotional distress. We may like to think that detecting disease early is universally advantageous to the patient and client, but more data are needed to substantiate this.

Finally, false-positive test results may lead to further diagnostic tests that are costly or associated with complications.

SPECIFIC SCREENING TESTS

The AAHA senior care guidelines recommend obtaining a minimum laboratory database yearly for middle-aged dogs and semiannually for senior-aged dogs. AAFP guidelines recommend obtaining a minimum laboratory database yearly for cats 7 to 10 years of age and to increase the frequency of testing as the cat ages to at least semiannually. Both sets of guidelines stress the importance of tailoring screening tests to individual patient factors, including breed, sex, medical history, familial history, physical examination findings, and medication use.

Although some recommendations for the use of screening tests in healthy patients are based on published data, epidemiologic information in veterinary medicine is significantly lacking for many disease processes. Thus, many recommendations are based upon clinical knowledge of disease progression, empirical experience, and expert opinion.

Laboratory Analysis

A complete blood count, chemistry profile, and urinalysis are included in most recommendations for senior wellness programs. These tests allow for the evaluation of organ and endocrine function, and the combination of all 3 tests allow for a thorough interpretation of disease. Early detection of anemia, leukocyte and platelet abnormalities, renal disease, liver disease, diabetes mellitus, and adrenal dysfunction are examples of disease processes that may be detected. If abnormalities are detected, other diagnostic tests may be indicated, or measures to treat or manage disease may be instituted.

Measurement of thyroxine (T4) is recommended for the detection of hyperthyroidism in cats. Initially, hyperthyroidism has an insidious onset and may affect the heart, liver, or kidneys before owners become aware of a problem. Although evidence is lacking that treatment of hyperthy-



WHEN CATCHING IT EARLY COUNTS

Renal disease may offer the most comprehensive evidence to substantiate the benefit of early detection and management of a disease condition. Appropriate dietary intervention has demonstrated a decrease in uremic episodes and death in cats or dogs with renal disease. In addition, proteinuria has been associated with decreased survival times in both cats and dogs with renal disease. Therefore, we can surmise that taking steps to reduce proteinuria may extend a pet's life. While such data may be lacking for other diseases, we can still postulate that earlier disease detection affords us a better opportunity to avoid a crisis situation that may irreversibly harm an animal.

roidism prolongs a cat's life, it does appear to increase quality of life by decreasing morbidity associated with the disease.

While T4 measurement is indicated in dogs with historical, clinical, or laboratory findings consistent with hypothyroidism, it is not an appropriate screening test in those with no clinical signs of hypothyroidism. There are a variety of factors that falsely lower a T4 value, including other diseases, medications, and time of day. The low prevalence of this disease in dogs and lack of sensitivity of the test do not meet the criteria of a good screening test.

T4 = thyroxine

Blood Pressure Measurement

The measurement of blood pressure in dogs and cats can be used as a screening test with caution. Blood pressure measurements can be quite variable depending upon the device used, operator inconsistencies, and the “white-coat” syndrome. If used as a screening test, the measurement should be taken over multiple sessions with the same device and technique and interpreted mindful of an animal’s level of anxiety.

Since hypertension is usually secondary to other disease processes, consistently high blood pressure readings warrant additional tests to identify a primary disease process. If a primary disease process is not identified and no target organ damage is evident, reliability of an isolated high blood pressure reading should be questioned.

Tonometry

Tonometry is valuable in the diagnosis and management of a variety of ocular conditions, including glaucoma. However, its use as a screening tool for the detection of glaucoma in an asymptomatic animal is not currently recommended. Glaucoma in dogs generally presents with an acute pressure elevation that is not preceded by a gradual increase in ocular pressures. Therefore, random tonometry readings are unlikely to detect glaucoma in most animals, with the possible exception of dogs with a form of open-angle glaucoma.

Electrocardiography

An electrocardiogram (ECG) is occasionally recommended as a screening test in senior animals.

An ECG is sensitive for detecting rate and rhythm disturbances but not for detecting structural heart disease. During a typical wellness visit, an ECG is rarely more useful than a thorough physical examination and auscultation for detecting a rhythm or rate abnormality and is therefore not recommended as a screening test. Exceptions to this rule may include the use of a 24-hour Holter monitor in breeds predisposed to arrhythmias.

Radiography

Thoracic and abdominal radiographs are often recommended in wellness programs for senior animals, but their use as screening tests should be questioned for several reasons. First, the likelihood of finding a significant abnormality in a patient without clinical signs is quite low. Second, radiographic interpretation is highly dependent upon positioning, technique, and skill of the interpreter. Third, unwarranted radiographs expose staff and patients to unnecessary radiation.

ECONOMIC IMPACT

When discussing the use of screening tests, clinicians cannot dismiss the economic impact of such tests on a client’s budget, especially over the lifetime of a pet. The benefit of performing screening tests should be balanced with the cost to clients. This may be accomplished by considering which animals are at higher risk for disease, using tests that have high sensitivity, screening for diseases that are prevalent and have a preclinical phase, and screening for a disease if early intervention has been shown to be beneficial.

See Aids & Resources, back page, for references and suggested reading.

FIND MORE

AAHA Senior Care Guidelines
for Dogs and Cats

aahanet.org/PublicDocuments/Senior_Care_final.pdf

AAFP Senior Care Guidelines

catvets.com/uploads/PDF/2008SrCareGuidelinesFinal.pdf

ECG = electrocardiogram