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ARTICLE #2

Preventive Healthcare the dog and cat

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Using a term such as Preventive Healthcare may provide clients with more incentive to proceed, as the goal of this field is the prevention of disease, or at least the delay in progression of disease.

Introduction

Wellness testing is the use of screening to detect abnormalities or diseases prior to the development of overt symptoms. There has recently been increased interest in both defining the terminology of wellness testing and developing protocols to dictate when this type of testing is most indicated. There is debate as to what terminology best summarizes this field, and recently, the terms Preventive Medicine or Preventive Healthcare have been used more frequently than Wellness Testing. Using a term such as Preventive Healthcare may provide clients with more incentive to proceed, as the goal of this field is the prevention of disease, or at least the delay in progression of disease.

In our companion animals, Preventive Healthcare is often employed. Laboratory testing is recommended in many practices prior to sedation or general anesthesia. Dogs are tested for the presence of heartworm, and then prophylactic medication used to avoid infestation. At-risk indoor cats may be screened for the presence of crystalluria. Puppies are routinely screened for intestinal parasitism, and receive deworming medications on a routine basis. In fact, the use of vaccination is a form of Preventive Healthcare. However, there are many areas where Preventive Healthcare is under-utilized in veterinary medicine.

Annual or biannual serum biochemical profile, complete blood count (CBC) evaluation, and urinalysis in a patient with an absence of clinical signs is recommended in many veterinary practices as a form of Wellness Screening or Preventive Healthcare. This type of screening has long been purported by some to be an important component of healthcare in companion animals. The argument is that early disease detection can enable further investigation and the instigation of appropriate medical therapies prior to the emergence of clinical disease. Similarly, the use of pre-operative laboratory screening for an elective surgical procedure can assist with minimizing morbidity and mortality if occult disease processes can be appropriately addressed peri-operatively. This is not to diminish the importance of a thorough history and physical examination, as these are also important tools in detecting occult disease. However, some abnormalities that are detected on routine laboratory testing will not be noted on physical examination or through determination of a history of the pet.

Arguments do exist against the use of Preventive Healthcare. Pursuing Wellness Screening requires consent from the pet's owner and is often reliant on a dialogue between the veterinary practitioner and their client, including justification for the monetary outlay. Currently, there exists a lack of large prospective studies to determine the benefits of wellness and pre-operative laboratory testing, which would assist with the dialogue between veterinarians and their clients. In addition, the discovery of abnormalities in laboratory tests of clinically normal pets may lead to the requirement for additional testing. In some cases, there is a morbidity and/or mortality associated with these tests, especially if anesthesia or biopsy is required. There is also a cost involved. It therefore becomes very important to utilize judgement in the interpretation of abnormalities noted in asymptomatic patients, and how to further investigate these abnormalities.

In 2005, the American Animal Hospital Association (AAHA) presented guidelines for evaluating the medical status of older companion animals.[1] These guidelines indicated that only a small number of senior pets underwent annual wellness screening, often because of a lack of standard recommendations from their veterinarian.[1] To address the insufficient guidelines, in 2011 the AAHA and American Veterinary Medical Association (AVMA) jointly published canine preventive healthcare guidelines. The goals were to improve the health of companion animals and to place a higher emphasis on the importance of disease prevention and early disease detection.[2] Although the guidelines are a useful starting place in considering the

importance of early disease/geriatric screening tests, there was a lack of information regarding specific age or testing parameters.[2] There also exists a 2012 AAHA canine life stage guidelines publication that acknowledges the importance of routine wellness testing, particularly in middle-aged and older pets, but doesn't provide specific guidelines regarding when to start testing.[3] Because of the lack of specific direction from these guidelines, it can be difficult to implement a clear and cohesive Preventive Healthcare strategy within individual veterinary clinics.

Occult disease in cats and dogs

Occult disease refers to the presence of illness in a clinically normal cat or dog. Detection of occult disease often results in the ability to prevent the development of symptoms, slow the progression of disease, or in some cases may allow resolution of disease. In addition, knowledge of the presence of disease can allow pet owners time to come to terms with their pet's illness, especially with more serious conditions. The following are examples of occult diseases we see in companion animals.

Protein-losing nephropathy

Filtration of blood in the kidneys should result in resorption of almost all protein, resulting in minimal to no loss of protein in the urine. Protein-losing nephropathy (PLN) is a condition that results in the loss of significant amounts of protein from the kidneys in the urine, currently defined as a urine protein:creatinine ratio of greater than 0.2. The main causes of PLN include glomerulonephritis, amyloidosis, and, to a lesser degree, Lyme Disease. This loss of protein can result in significant hypoalbuminemia without the development of symptoms. Other abnormalities that are often seen include azotemia, hyperphosphatemia, anemia, thrombocytosis, and hypercholesterolemia. Many pets with PLN will have a normal urine concentration, even with severe disease. In fact, many cases only develop symptoms once their albumin is severely reduced (typically lower than 15 g/L), resulting in the development of ascites, pleural effusion and/or peripheral edema. Ultimately, PLN can result in thromboembolism and renal failure.

The majority of cases of PLN have significant hypertension, which is also an occult disease. The presence of persistent hypertension can cause damage to the glomeruli, perpetuating renal injury and potentially leading to more rapid deterioration of the kidney. In cases of PLN, early detection and therapy allows control of hypertension, which may slow the progression to renal failure. Early therapy may also prevent the development of severe hypoalbuminemia and symptoms.

Therapy for PLN includes the use of an angiotensin-converting enzyme inhibitor or angiotensin II receptor blocker, which reduces the degree of proteinuria and also addresses hypertension. Although counter intuitive, a low protein diet is also indicated, and in many cases an anti-coagulant is recommended. The prognosis with therapy is variable, but many pets can be treated long term without symptoms.

Chronic hepatitis

Inflammation of the liver, or hepatitis, is usually due to an immune attack on the liver, or due to breed-related copper accumulation. It typically affects middle-aged dogs, especially the Doberman Pinscher, Labrador Retriever, and Bedlington Terrier, among others. It is a slow, insidious process, and pets typically do not develop symptoms until late in the disease progression, once irreversible cirrhosis (fibrosis) has developed. Pets with chronic hepatitis have an intermittent elevation of ALT over a long period of time, and 90% of afflicted animals will have an ALT 5-18 times normal.[4] Once a large proportion of viable liver is replaced with fibrosis, ascites, hypoproteinemia, and cachexia develop.

Diagnosis requires a liver biopsy, which can be performed with minimally invasive techniques such as ultrasound-guided biopsy or laparoscopic biopsy. In order to detect this disease prior to development of fibrosis, at a time when therapy will be the most effective, blood work needs to be performed prior to the onset of symptoms.

Treatment for chronic hepatitis includes a glucocorticoid and possibly additional immunosuppressive medication, ursodeoxycholic acid (ursodiol), and an anti-oxidant such as SAM-e and/or vitamin E. Cases with copper-associated hepatitis also require a copper-chelating agent. Prognosis is dependent on the degree of fibrosis present at the time of diagnosis, and the presence or absence of indicators of liver failure, such as hypoproteinemia, low urea, cachexia and ascites from portal hypertension. Prognosis is significantly better in cases where the disease can be detected early on, and long before the development of any symptoms.

Idiopathic Hyperlipidemia

It is quite common to take blood from a pet, spin the sample to separate the serum, and see a very prominent lipid component to the separated serum. In most cases, this is because the pet was not fasted. However, fasting hyperlipidemia is inappropriate and an indication of an underlying disease process. Some of the causes seen in cats and dogs include hypothyroidism, diabetes mellitus, hyperadrenocorticism, nephrotic syndrome, cholestasis, and the use of glucocorticoids, etc. For the Miniature Schnauzer, and also the Beagle, Shetland Sheepdog, Briard, Rough Collie, Poodle, Burmese cat and other breeds, idiopathic hyperlipidemia exists.

Idiopathic hyperlipidemia is a condition that results in the progressive elevation in triglyceride levels over time. This condition is linked to a mild, progressive increase in ALT. The presence of elevated lipids can lead to pancreatitis and thromboembolism. In some cases, it has been linked to the development of a gall bladder mucocele. In most cases, there are no symptoms of hyperlipidemia. This is a treatable condition, with almost all pets requiring only dietary modification. However, it is a reminder that the presence of visible lipid in separated serum, or the presence of significant lipemia on a biochemical panel, should not be overlooked, especially in at-risk breeds.

Hypercalcemia and Urolithiasis

Cats and dogs bodies are well equipped to keep the calcium level in a normal range. It is therefore concerning when hypercalcemia is noted on routine biochemical analysis. Many of the main causes of hypercalcemia typically present with no overt clinical signs, such as anal gland adenocarcinoma, primary hyperparathyroidism, and idiopathic hypercalcemia of cats. In fact, some pets with lymphoma, hypoadrenocorticism, and even renal disease will present with no clinical evidence of their underlying disease. Many of these diseases are most effectively treated when caught early in the progression of disease, such as with anal sac adenocarcinoma.

If left untreated, hypercalcemia can lead to mineralization of organs and subsequent organ damage. In addition, it is common to see the formation of calcium-based urolithiasis with chronic hypercalcemia. Urolithiasis is another disease that is commonly occult, as many patients will not show symptoms such as hematuria and dysuria. However, chronic uroliths can result in urinary tract infections, chronic irritation, and can also cause obstructive disease in the ureters or urethra that can lead to catastrophic complications. Early detection of both hypercalcemia and urolithiasis has the potential to improve the outcome with appropriate intervention. This also highlights the importance of including a urinalysis with all Preventive Healthcare laboratory testing.

What data do we have addressing the utility of Preventive Healthcare testing?

In many veterinary clinics, routine wellness screening is discussed with all owners on a yearly basis. In addition, part of the discussion with pet owners prior to any procedure includes the recommendation to perform pre-anesthetic laboratory screening. However, to date in both human and veterinary medicine, there is a lack of data regarding whether this is in fact in our patient's best interest. Two veterinary studies evaluated the value of preanesthetic laboratory screening of companion animals, and they yielded conflicting results.[5,6] One study concluded that preoperative laboratory assessment of canines was of minimal value and did not modify the established anesthetic plan.[5] In the second study, preanesthetic screening resulted in 13.0% of study participants having their anesthetic procedure cancelled.[6] Additionally, this same study suggested that nearly 30% of geriatric patients could have subclinical disease; therefore, screening of the healthy, mature pet warranted further clinical investigation.[6] Similarly, in a 2012 study investigating the utility of abdominal ultrasound for the early detection of splenic hemangiosarcoma in an at-risk breed in which baseline CBC, biochemical profile, and urinalysis were performed, almost half of the dogs (49%; 26/53) had laboratory changes that indicated potentially significant disease that warranted either monitoring or further diagnostic evaluation.[7] Another study presented in 2012 evaluated a large cohort of healthy dogs and cats, and found that almost 40% of dogs, and 66% of cats, had blood work abnormalities present on a routine CBC and biochemical profile.[8,9] All of the studies have indicated that larger, more cohesive studies are required to provide more information, and allow statements regarding age, breed and gender disease predilection.

Preventive Healthcare

For many pets, there is no longer a requirement for yearly vaccination. It is therefore now essential to stress the importance of a yearly Preventive Healthcare visit to allow for early detection of disease and assessment of general health status. The importance of obtaining a thorough history, along with a complete physical examination, including rectal palpation, is often overlooked by the pet-owning population. Vital parameters and weight are data that can provide trends towards disease development. Counseling owners about their pet's age and breed in relation to disease prevalence can aid in early disease detection.

It appears that there are certain preventable diseases that are becoming more prevalent over time, or at least currently recognized more frequently. These include diseases such as dental disease, parasitism, and otitis externa. Routine healthcare visits allow the detection of these diseases earlier in their progression. The disease process can then be monitored, and treatment addressed at an appropriate time. Routine visits to the veterinary clinic can also help with other diseases such as diabetes mellitus and osteoarthritis, where the detection of a gradual increase in weight may prompt dietary and exercise modifications.

Ultimately, studies regarding Preventive Healthcare have revealed that there is still a lot to learn. There are valid arguments on both sides of the Preventive Healthcare debate, and this information should make us look at each patient individually to assess what is in their best interest. As veterinarians and veterinary staff, it is our job to counsel owners with the most current information possible. We need to consider age, breed, gender, and also cost involved for our pet owners. In cases where abnormalities are found, we have to again use our judgement in counselling owners on recommended follow up testing, considering any morbidity or mortality associated with the additional testing, and cost involved. This must be then weighed against the potential outcome if we detect an underlying disease process.

How do we integrate Preventive Healthcare into daily practice?

The cornerstone to implementing an effective Preventive Healthcare program in any successful veterinary practice is client communication. However, the area that is often overlooked when implementing this type of program is the training of all veterinary staff. All members of the veterinary staff may have contact with owners, and should have the ability to participate in conversations regarding Preventive Healthcare. This includes reception staff, animal care attendants, groomers, veterinary technicians, clinic managers, and veterinarians. Utilizing the AAHA and AVMA Preventive Healthcare Guidelines can provide a structure to the program.[2] These guidelines do not yet provide specific instructions based on age, gender and breed, which is where the veterinarian currently must use their judgement.

How effectively your clinic's Preventive Healthcare program is communicated to your pet owners will determine its success. Having either your clinic's Preventive Healthcare program guidelines or the AAHA/AVMA Preventive Healthcare Guidelines[2] posted in the waiting area can provide education and also stimulate discussion amongst the receptionist and clients (Tables 1 and 2). Providing a written copy to clients can be useful, and communication via the clinic website can be considered. If routine screening laboratory work is performed, providing a summary sheet of findings can validate the utility to the pet owner. This can include a description of specific abnormalities, or an indication that the day's visit revealed nothing concerning. It is important to stress the fact that normal results are good news, and that they also provide a baseline for the future. If prophylactic medication is prescribed such as heartworm preventive, deworming medication or tick/flea prevention, a summary sheet can be provided to describe the disease that has been prevented.

Clients respond to being included in the process of Preventive Healthcare, and often will attempt research on their own if they feel that they did not obtain sufficient information. Ensuring an open relationship with clients based on effective communication, where they feel that their first source of information is their veterinary clinic, will improve the bond between the pet owner, pet and veterinary clinic.

Creating a strong bond with your clients and all of the staff at your practice will increase the chance that pet owners will come to your clinic first when symptoms arise. For many pet owners, development of symptoms in their cats and dogs will lead them to pursue their own research both online and through discussions with other pet owners in the park, pet store employees, etc. In many cases, treatment for occult or mild disease is delayed unnecessarily because clients may elect not to pursue veterinary care initially, based on the information that they have obtained online or through non-veterinary sources. Having a strong Preventive Healthcare program creates a plan with clients to proactively approach their pet's health, which will often lead them to seek a veterinary opinion first.

Preventive Healthcare in the dog and cat ...continued

As veterinarians and veterinary staff, it is our job to counsel owners with the most current information possible. We need to consider age, breed, gender, and also cost involved for our pet owners.

Ultimately, a Preventive Healthcare program will be successful if all of the veterinary staff understand the program, but they must also believe in the program. The goal of a Preventive Healthcare program is to enhance the pet's health and longevity. Standard Preventive Healthcare program guidelines for the clinic should be prepared and distributed to all personnel. Including staff members in the preparation of guidelines and implementation will improve the process. Counselling staff members on use of the Preventive Healthcare program should include instruction on the basics of a CBC, biochemical analysis and urinalysis, the basics of vaccination programs, and the basics of preventive medications such as heartworm prophylaxis. In addition, staff members should be prepared to answer why the Preventive Healthcare program is important to each pet. Ensuring adequate time in appointments to answer questions regarding the program, whether it be for the technician or veterinarian, is important to ensure the owners understand the purpose and utility of the visit.

I was recently asked by a client why I bothered to do routine testing on my own pets, given they live with veterinarians. My response was that an annual physical examination and obtaining a history allows the internal health of my pets to be assessed, which is not something that I am doing when I am home with them. Preventive Healthcare helped to diagnose my own indoor cat with toxocariasis, which was asymptomatic. Given that a significant percentage of healthy animals have occult disease present, I would like to find that as early as possible, whether through the annual visit or through annual laboratory testing. Having a clinic with a Preventive Healthcare program provides me with a place that is monitoring my pets' health. For staff talking to pet owners, using examples of their own pets can be helpful, and will also validate the importance of Preventive Healthcare in the staff's minds.

Successful Preventive Healthcare programs come down to the development of clear and easy to follow guidelines, effective staff preparation, and thorough client education and communication. This will involve all members of the veterinary team, and likely will also involve more than one method of communication, such as reminders on invoices, written literature, verbal communication and online information. Setting expectations early, at the time of initial consultations or puppy/kitten visits, will allow clients to have a set plan right from their first visit to your clinic.

Table 1: A summary of the AAHA-AVMA Canine and Feline Preventive Healthcare Guidelines.

- All dogs and cats should have a veterinary exam at least annually, including the following:
- History, physical examination, heartworm testing if geographically indicated, internal parasite testing; retroviral testing in cats
- Customized plan based on this assessment, consider early disease screening tests and genetic tests, other diagnostic tests such as dental radiographs
- Parasite control prescribed
- Consider tick control; dental, behavioural, dietary and environmental enrichment recommendations
- Vaccinations as indicated geographically; discuss core and non-core
- Spay/neuter/microchip counselling
- Discussion of zoonotic disease, prevention
- Establish a plan for the next visit, set expectations
- Thorough documentation of the visit

Table 2: Author's recommendations for annual Preventive Healthcare program.

All dogs and cats should have a veterinary exam at least annually, based on the AAHA-AVMA Canine and Feline Preventive Healthcare Guidelines[2], with these additional considerations:

- Preanesthetic blood and urine testing should be offered and discussed for every patient requiring sedation or general anesthesia
- Wellness/Preventive Health program blood and urine testing should be discussed at each visit:
  - Ideal to get "baselines" when pets are younger
  - Start yearly testing at middle age if not done earlier, will have to base the definition of middle age on species and breed
- Consider testing of specific parameters in certain breeds, examples:
  - ALT in young Labrador Retrievers, Dobermans, Great Dane, Springer Spaniel, etc
  - ALT and potentially bile acids in juvenile Yorkshire Terriers, Pugs, Maltese, etc
  - Fasting triglyceride and ALT in Miniature Schnauzers
  - Albumin in Norwegian Lundehund, Yorkshire Terriers, Rottweilers
  - Renal profile in healthy cats (urea, creatinine, phosphorus, potassium, urinalysis, blood pressure) by 11 years of age[8]
  - Total T4 in healthy cats by 14 years of age[8]

Preventive Healthcare in the dog and cat
...continued

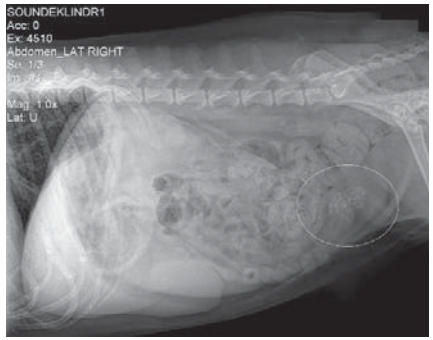
Figure 1 ■ Murphy, an 8 year old male neutered Coton de Tulear, diagnosed and treated with protein-losing nephropathy and protein-losing enteropathy. Murphy presented with minimal symptoms and severe hypoalbuminemia (10 g/L; reference range 27-39 g/L).

Figure 2 ■ Ultrasound image of a parathyroid nodule in an 11 year old female spayed terrier cross with severe hypercalcemia and a diagnosis of primary hyperparathyroidism. There were minimal symptoms associated with the hypercalcemia

Figure 3 ■ Severe hyperlipidemia in a serum sample. Kindly provided by IDEXX Canada.

Figure 5 ■ Feline calcium oxalate urolith after removal. Kindly provided by Andrew Moore of the Canadian Veterinary Urolith Centre.

Figure 4 ■ Lateral abdominal radiograph of a dog with numerous cystic uroliths.



Dr. Jinelle Webb

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