

## THAT SKINNY OLDER CAT AN OVERVIEW OF HEALTHCARE MANAGEMENT IN THE AGING CAT

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The definition of "geriatric" has changed over the last decade, not just in cats, but in other species, as well. The government, trying to find ways to prepare for the financial and social policy onslaught of the creaking baby boomers has raised the retirement age. Life insurance companies have raised the age limits on coverage. These are reflections of greater longevity in our own species and the benefits of improved health care and nutrition.

In cats, life expectancy has risen, on *average*, to 14-16 years of age. We are living in the (human) generation which overall sees the benefits of the acceptance and compliance of the general "cat owning" public with our recommendations in vaccination protocols, nutritional counselling/the availability of nutritionally balanced feline-specific diets, and dental hygiene. And, while we can always focus and expand our client education efforts, the veterinary community, and to a great extent industry, have done a good job in client education! We should be proud of ourselves.

What is a "senior" or "geriatric" cat? In a cat, "senior" ranges from about 9-12 years of age with "geriatric" after that: these age ranges correlate roughly with human ages of 52-64 and 68 onwards<sup>1</sup>. (Figure1) A cat may *begin* to manifest serious age-related disorders, (e.g. renal insufficiency) on average, around 8 - 9 years of age. This does NOT make that individual old... or less treatable. Aging comes equipped with a set of cellular changes that are somewhat predictable and which need to be taken into consideration in our approach to health care, both preventative as well as therapeutic. At any age there are changes and disorders, particular to that age group or stage of progression.

Figure1.

Age (senior) (geriatric)	Relative age in human years
6	40
7	44
8	48
9	52
10	56
11	60
12	64
13	68
14	72
15	76
16	80
17	84
18	88
19	92
20	96

Adapted from Metzger FL, Senior and Geriatric Care Programs for Veterinarians in Vet Clin Small Anim 35 (2005) 743-753.

Aging is a complex process reflecting increasing damage at the cellular and organismal level. To paraphrase from Robbins<sup>2</sup>: Aging begins at the moment of conception, involves

differentiation and maturation and, at some point, leads to the progressive loss of functional capacity characteristic of senescence ending in death. This occurs at an organismal level as well as at a cellular level. The former may be affected by genetics, social environment, nutrition, and the occurrence of age-related diseases. Cellular aging, on the other hand, includes progressive accumulation of sub lethal injury (e.g., from free radical damage), resulting in either cell death or diminished capacity of the cell to repair itself. We can impact these changes to some degree through nutritional intervention. More on this later.

### **Nutritional considerations of aging**

What happens to body composition as cats age? Maintenance energy requirements (MERs) vary with age, genetic potential, health status, and gender (intact or altered). MERs decrease with age in humans, dogs and rats. In cats, interestingly some reports no change; when evaluated over longer periods, it has become apparent that MERs decrease until about 11 years of age. After this point, however, MERs per unit body weight actually increase<sup>3,4,5</sup>.

Cats in the middle ages ("senior"), under 12 years tend to overweight or obesity as energy needs decrease without concurrent decrease in energy intake. Lean body mass (LBM, skeletal muscle, bone, skin and organs) decreases in cats, just as it does in other species, with advancing age. As LBM is a primary driver of metabolism, all decreases in activity result in reduction in MER.

Studies in geriatric cats over 12 years of age show that fat digestibility decreases with age<sup>6</sup>. Additionally, approximately 20% of cats over 14 years of age have reduced protein digestion. This is of clinical relevance when we try to design the optimal nutritional regime for our older feline patients: protein and fat restriction may well be contraindicated. Especially if underweight, older cats will benefit from a more energy-dense, highly digestible diet to help offset these age-related digestive and metabolic changes.

Key to determining the appropriate diet for any given individual is a nutritional assessment. This should include determining not only body weight at every visit, but also identification of body composition, most practically by using a body condition score. Percentage weight change determination is helpful in detecting trends and alerting both the practitioner and the client to insipient (or blatant) physiologic alterations. Use of a simple diet history form provides important information by revealing not only food fed, but also brand and quantity and treats or supplements that this patient may have access to. (Figure 2 after References.)

Recently work has been done studying feeding the healthy, older cat<sup>7</sup>, looking at whether the use of dietary antioxidants (Vitamin E, beta carotene) alone or in combination with a prebiotic (chicory root) and a blend of oils to supplement n-3 and n-6 fatty acids had a beneficial effect on the health and longevity of cats when compared to a complete and balanced diet. Ninety cats over seven years of age (grouped into 7-9, 10-12 and 13 + years of age at time of start) were studied in a controlled environment for five years. As described earlier and as expected, all cats lost weight as they aged, but cats in the fully supplemented group lost less weight than those in the other two groups. Other beneficial effects noted were improved LBM scores, improved fecal microflora, fewer diseases (notably gastrointestinal) during the study and longer life.

Weight loss in older cats can be a frustrating and worrying change. While possibly normal in the older individual, it is of great importance to the cat and the client that the cause be determined. (Figures 3 and 4). Optimising oral and dental health cannot be over-emphasized, yet clients may express concern about anaesthetising the elderly cat. Several papers have looked at risk factors for anaesthesia. Proper staging of the patient and taking appropriate precautions were

found to minimize perianaesthetic complications; age was not found to be a risk factor<sup>8,9</sup>. (Figure 5). Reminding our clients that the majority of anaesthetic procedures in human medicine are performed on elderly patients, may provide reassurance that safe anaesthesia is possible allowing their cat to enjoy the benefits from the dental or other procedure if appropriate pre-anaesthetic precautions and intra-operative monitoring are undertaken.

Figure 3:

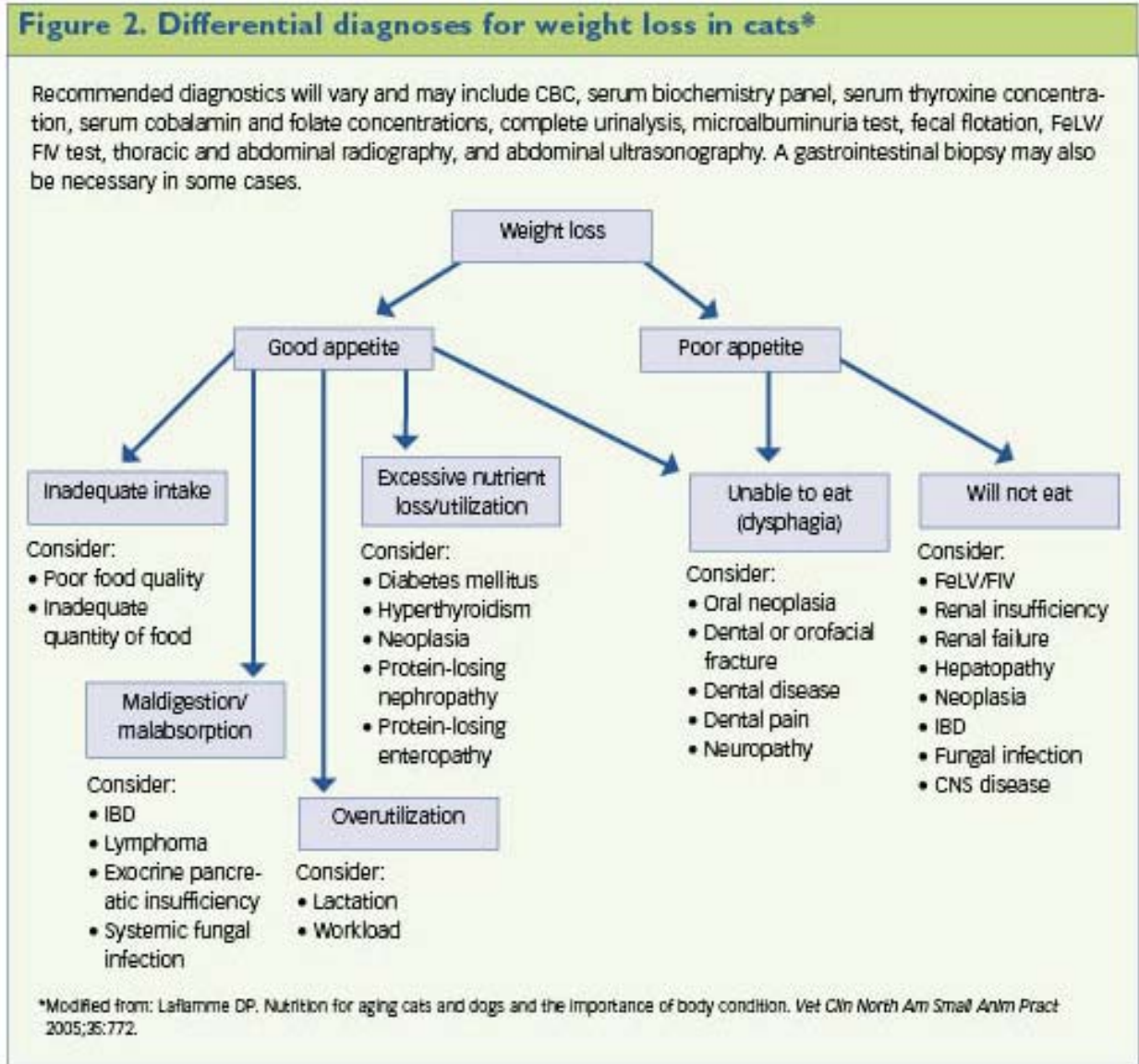


Figure 4:

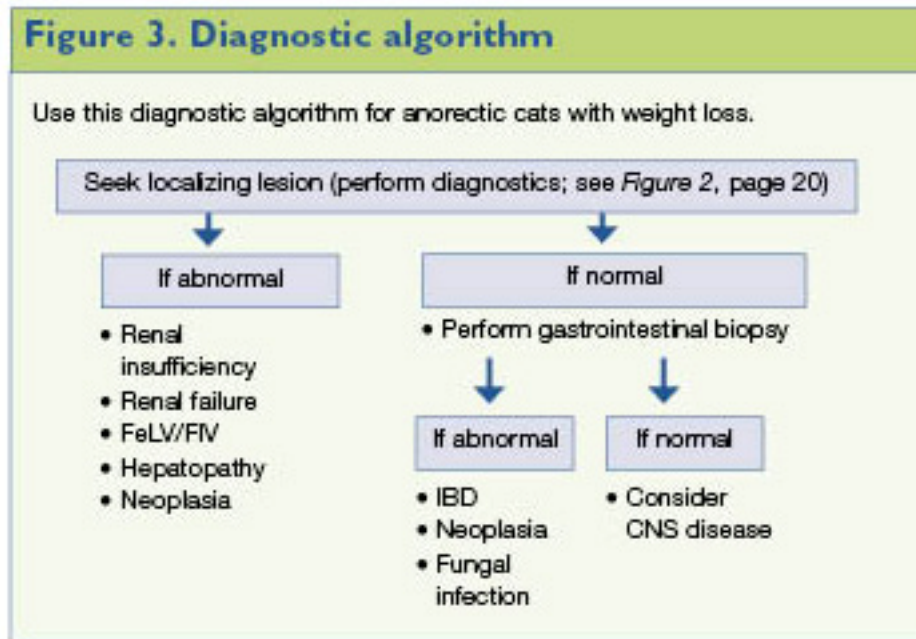
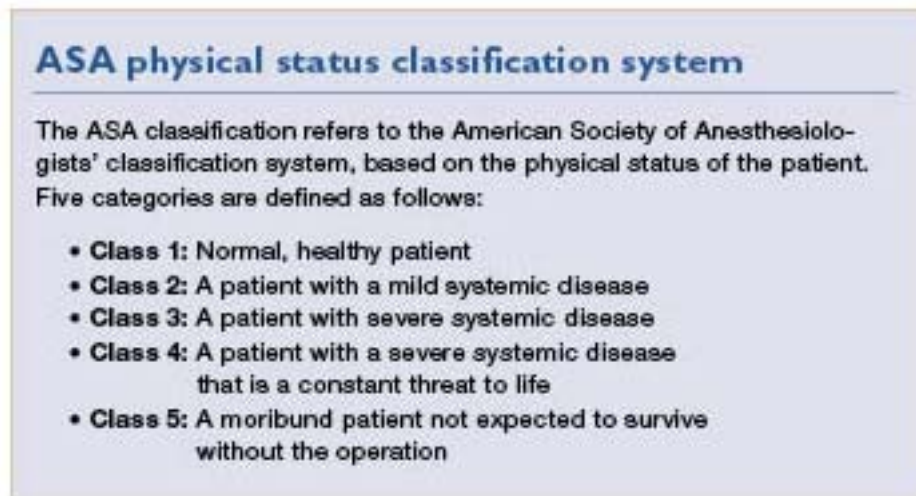


Figure 5:



The skinny older cat, especially if inappetent or anorectic has a limited ability to conserve his/her body proteins. This results in a negative nitrogen balance, protein: calorie malnutrition and deterioration of protective mechanisms impacting immunity, red cell hemoglobin content, muscle mass as well as tissue healing ability. Inappetance and anorexia must be dealt with promptly and adequately. Cats have limited storage of many nutrients and restricted ability to down-regulate numerous metabolic processes. They were designed to eat multiple small meals per day, high in protein, and moderate in fat. Hepatic lipidosis is always a risk, especially in the previously obese cat. It is essential to daily calculate caloric and protein requirements, just as one routinely calculates fluid needs as part of the therapeutic plan. [Calories: 50 kcal/kg ideal BW/day; 4 g protein/kg ideal BW/day]. Appetite stimulants including cyproheptadine (1 mg/cat PO BID), mirtazapine (3 mg/cat PO q72h) may help jump-start a cat's appetite, but one must be

wary not to lose sight of total calories consumed. If a cat is eating but not enough, supportive feeding (assisted syringe feeding or tube feeding) must be considered.

For a patient with apparent maldigestion such as seen with chronic small intestinal disease<sup>10,11</sup>, folate and cobalamin supplementation has been shown to be beneficial (folate: 0.5-1.0 mg/cat/day PO X 1 month; cobalamin 250 mg/cat SC once weekly X 6 weeks).

### **Age-associated illnesses**

What are some of the "age associated illnesses" of cats? We see a marked increase in metabolic disturbances related to the urinary tract (chronic renal insufficiency (CRI), pyelonephritis and certain forms of lower urinary tract disorders (LUTD) calcium oxalate ureteronephrolithiasis), endocrine system (hyperthyroidism, diabetes mellitus), arthritis, dental diseases and neoplasia. Certain infectious diseases become more likely in the older individual (e.g., FIP). A decline in functioning of the special senses occurs frequently and behaviour changes suggestive of cognitive dysfunction may be seen in some individuals.

Ophthalmologic aging changes include iris atrophy, melanin deposition on the irises and lenticular sclerosis. While the former do not appear to affect vision, lenticular sclerosis results in a decreased acuity that would be expected to be most obvious in dim lighting. Impaired hearing is fairly common in older cats with selective frequencies being affected, similar to that which occurs in older humans. The end-result of these alterations in perception may be "nocturnal yowling" as the individual strives to orient him/herself with the help of cues from the caregiver. Other causes of this behaviour include hyperthyroidism or hypertension (both presumably resulting in agitation), cognitive dysfunction or pain.

Development of inappropriate elimination behaviour may have several age-associated causes. Pain from arthritis may make getting to the box or getting into the box difficult. Past experiences of discomfort from cystitis or difficult stool passage may result in aversion to use of the litter box. Urge incontinence (urinary or fecal) may result in the inability to get to the box in a timely fashion resulting in the development of an alternative location for eliminative behaviours. Hyperthyroidism may result in defecation of normal or diarrheic feces outside the litter box.

We also see conditions related to altered hydration and nutritional requirements, such as "constipation". "Constipation" is a sign of dehydration, for the most part. Cellular water content has priority over fecal water content, thus primary treatment should be directed towards rehydration and correction of the underlying cause(s) of that problem, rather than at the consistency of the stool and its movement (e.g. with laxatives). Use of promotility agents, laxatives, osmotic agents and fiber-enriched diets should be used conservatively and once rehydration has been addressed.

Because of the reduced ability that most older cats have to reclaim water from their urine, special attention should be paid to counselling the client regarding hydration. Circulating water fountains are accepted by many cats as are flavoured broths. Increasing the proportion of canned food fed and adding water to the food are the easiest ways to address the increased fluid needs of the cat. Subcutaneous fluids administered at home become part of daily maintenance care for many elderly cats.

Normal radiographic changes seen in the older feline patient include an increase in sternal contact of the heart. A decrease in bone density may be seen in very elderly individuals. Some minor calcific changes may occur in the pulmonary parenchyma of normally aging cats. Spondylosis should be looked for especially of the lumbar vertebrae, but bony changes may be

seen in any part of the spinal column as well as degenerative, proliferative or lytic changes of the joints. Calcifications may be noted in the kidneys: these are often insignificant, representing calcification of old clots. Differentiation from nephroliths can be made with aid of ultrasound. Similarly, adrenal calcification should not be over-interpreted in cats, as it may be a normal, age-related change.

### **The pains of aging**

Oral diseases such as periodontal disease, root exposure, odontoclastic resorptive lesions, stomatitis and oral masses are all potentially painful. Surgical manipulations of tissue result in inflammation as well as direct trauma and cell damage which will initiate the pain response. Similarly, common procedures including blood collection, intravenous catheter placement, restraint of a thin or arthritic patient may be uncomfortable. In addition, there are numerous potentially chronic painful conditions. Bacterial cystitis and pyelonephritis are more frequent in older cats while the incidence of interstitial/sterile cystitis or inflammatory bowel disease is not different than in cats of younger age groups. The likelihood of neoplasia increases with increasing age. The need for analgesia MUST be considered as part of any treatment plan for the older cat.

Recognition of chronic pain and arthritic pain is a relatively recent event. The incidence of osteoarthritis or degenerative joint disease appears to be much more common than previously thought and is probably a major cause of discomfort in ageing cats. Secondary osteoarthritis may be caused by joint trauma (i.e., fractures or ligamentous injuries), infectious or immune-mediated inflammation, compensation for congenital and developmental, as well as neoplastic, endocrine (diabetic) or metabolic conditions. Osteoarthritis involves cascade of mechanical and biochemical events resulting in articular cartilage deterioration, synovial membrane inflammation, soft tissue changes and osteophyte formation, with bone remodelling.

In one study of the prevalence of degenerative joint disease (DJD) in cats<sup>12</sup>, Hardie *et al* reviewed 100 radiographs (taken as part of a diagnostic workup for multiple reasons) of cats over 12 years of age finding that 90% of these cats showed evidence of DJD. Interestingly, in only 4 of these patients' medical records was a concern noted for DJD. Does this mean that, as in dogs, the clinical signs of OA do not correlate well with radiographic findings or does this mean that we are very poor at recognizing the signs? Godfrey<sup>13</sup> performed another retrospective radiographic study looking at cats of all ages. This study showed radiographic changes suggestive of OA in 22% of cats; in 33% of these cats' medical records, clinical signs were noted. In a third study<sup>14</sup>, the prevalence of radiographic signs of DJD or OA in 218 cats was 33.9%, of clinical signs was 16.5% and most of these were in cats over 10 years of age.

Lameness is not a common clinical sign of this problem in cats. Rather, the signs are insidious or attributed to ageing. They include inappropriate elimination (often adjacent to the litter box), decreased grooming, developing antipathy for being combed, reluctance to jump up or down, sleeping more, moving less, withdrawing from human interaction, and possibly even hiding. When activity monitors have been attached to cats' collars<sup>15</sup>, activity counts increased with non-steroidal anti-inflammatory drug (NSAID) treatment suggesting alleviation of musculoskeletal discomfort.

### **Caring for the elderly cat**

Older feline patients have particular therapeutic and nursing needs. It is important to restrict the hospital stay to as short as possible, as the older cat is less tolerant of the hospital environment and is more prone to depression and pining. Some problems may be masked and even undetectable with careful and thorough examination, yet make their presence known when the

patient is stressed. Many of the conditions, which these special individuals develop, require ongoing home care, such as subcutaneous fluid administration, frequent medication administration and dietary manipulation.

Some cats prefer medications administered subcutaneously rather than orally; when the agent exists in SC useable format, this is often an easier route for clients to use. Palatability of diets, especially in the face of declining senses, is especially important. Many older cats need an increase in biologically available protein rather than a decreased amount. Special thought should be given with each elder patient as to the potential need for analgesia. Slow, gentle persistence with acute and **empathic** observation are our best tools in the care and handling of older cats.

A screening program for the older cat is an excellent management tool. Offering such programs, as part of a Wellness Program approach, provide the best preventive medical care as well as giving the clinic a more predictable income base. At the author's clinic, the Mature Cat Program consists of an examination, a urinalysis, blood pressure determination and a blood panel consisting of a CBC with differential, biochemical screen including a basal serum T4, amylase, lipase and electrolytes. We recommend this annually for all cats from the age of 8 years onwards and twice annually for cats over 14 years of age or once abnormalities have been detected to assist in the management of these problems. With the introduction of the Healthy Cats for Life program sponsored by the American Association of Feline Practitioners (AAFP), the new recommendation is semi-annual wellness exams in cats of all ages in order to increase the opportunity to illness in cats by teaching people the ten subtle signs of sickness. [www.healthycatsforlife.com](http://www.healthycatsforlife.com). Client acceptance of this and other Wellness Programs is very good.

Finally, when is enough, enough? Although we have the ability to help and prolong life, the quality of such must be first and foremost in the practitioner's and the client's mind. "Just because we can, doesn't mean we should." The author refers the reader to a paper on the Ethical Issues in Geriatric Feline Medicine<sup>16</sup>. We can help and do a lot; we just have to know when to stop.

We are fortunate to practice in times that allow us to not only recognize changes and conditions associated with aging, but also to influence the experience of growing older. With courage and perspective, we can improve the lives of our patients making their older years more enjoyable for both them and their human companions.

#### References:

1. Metzger FL, Senior and Geriatric Care Programs for Veterinarians in Vet Clin Small Anim 35 (2005) 743-753.
2. Cellular injury and cellular death In Cotran RS, Kumar V, Robbins SL (eds): Robbins: Pathologic basis of disease, W B Saunders, Philadelphia, 5<sup>th</sup> ed, 1994, p32-33.
3. Laflamme DP, Ballam JM. Effect of age on maintenance energy requirements of adult cats, Compend Contin Edu Pract Vet 2002; 24 (Suppl 9A): 82.
4. Cupp C, Perez-Camargo G, Patil A, et al. Long-term food consumption and body weight changes in a controlled population of geriatric cats (abstract). Compend Contin Edu Pract Vet 2004; 26 (Suppl 2A): 60.
5. Armstrong PJ, Lund EM. Changes in body composition and energy balance with aging. Vet Clin Nutr 1996; 3:83-7.
6. Perez-Camargo G. Cat Nutrition: what's new in the old? Compend Contin Edu Pract Vet 2004; 26 (Suppl 2A): 5-10.

7. Cupp CJ, Jean-Philippe C, Kerr WW, et al. Effect of Nutritional Interventions on Longevity of Senior Cats. *Intern J Appl Res Vet Med*. 2006; 4 (1): 34-50.
8. Hosgood G, Scholl DT. Evaluation of Age and American Society of Anesthesiologists (ASA) Physical Status as Risk Factors for Perianesthetic Morbidity and Mortality in the Cat. *J Vet Emerg Crit Care*. 2002; 12 (1): 9-15.
9. Brodbelt DC, Pfeiffer DU, Young LE, et al. Risk factors for anaesthetic-related death in cats: results from the confidential enquiry into perioperative small animal fatalities (CEPSAF). *British Journal of Anaesthesia* published online on September 19, 2007.
10. Simpson KW, Fyfe J, Cornetta A, et al. Subnormal concentrations of serum cobalamin (vitamin B12) in cats with gastrointestinal disease. *J Vet Intern Med*. 2001 Jan-Feb;15(1):26-32.
11. Reed N, Gunn-Moore D, Simpson K. Cobalamin, folate and inorganic phosphate abnormalities in ill cats. *J Feline Med Surg*. August 2007;9(4):278-88.
12. Hardie EM, Roe SC, Martin FR. Radiographic evidence of degenerative joint disease in geriatric cats: 100 cases (1994-1997). *J Am Vet Med Assoc* 2002; 220(5): 628-32.
13. Godfrey DR Osteoarthritis in cats: a retrospective radiological study. *J Small Anim Pract* 2005; 46, 425-429.
14. Clarke SP, Mellor D, Clements DN, et al. Prevalence of radiographic signs of degenerative joint disease in a hospital population of cats. *Vet Rec* 2005;157, 793-799.
15. Lascelles BD, Hansen BD, DePuy V, et al. Evaluation of client specific outcome measures and activity monitoring to measure pain relief in cats with osteoarthritis. In: 2nd World / 33rd Annual Veterinary Orthopedic Society Conference: Keystone, Colorado, 2006.
16. Rollin BE. Ethical Issues in Geriatric Feline Medicine. *J Feline Med Surg*. 2007; 9 (4): 326-34.

Figure 2:

**Figure 1. Diet history form\***

Date: \_\_\_\_\_

Client's name: \_\_\_\_\_ Cat's name: \_\_\_\_\_

Breed: \_\_\_\_\_ Gender: M MC F FS

Age: \_\_\_\_\_ Body weight: \_\_\_\_\_ Body condition score: \_\_\_ / 9

Activity level: High Medium Low Very Low

**What food(s) are currently fed for the cat's main meal?**

**Dry:** never occasional/small proportion about half mostly exclusively  
If fed, what brands and amounts are fed most often: \_\_\_\_\_

**Canned:** never occasional/small proportion about half mostly exclusively  
If fed, what brands and amounts are fed most often: \_\_\_\_\_

**Home prepared:** never occasional/small proportion about half mostly exclusively  
If fed, please provide recipes used. \_\_\_\_\_

**What treats and/or supplements are currently fed?**

**Commercial treats:** No Yes  
What brands and amounts are fed most often: \_\_\_\_\_

**Fresh foods/table scraps:** No Yes  
What foods and amounts are fed most often: \_\_\_\_\_

**Dietary supplements:** No Yes  
What supplements and amounts are fed most often: \_\_\_\_\_

**Have there been recent changes in foods/brands fed?** No Yes  
If so, when and why? \_\_\_\_\_

**How is your cat's appetite?** Good Poor **Any recent changes?** \_\_\_\_\_

**How frequently does your cat defecate?** 0-1x/day 2-3x/day 4x or more/day Don't know

**How would you characterize its stool?** Firm/hard Formed but not hard Loose

**Where does your cat spend most of its time?** Indoors Outdoors About half in and half out

**How much time does your cat spend exercising each day?** <30 min/day 30-60 min/day More

**Are there other pets in your household?** Yes No

**Do you have any questions regarding your cat's diet?** \_\_\_\_\_

\*Modified from: Laflamme DP. Nutrition for aging cats and dogs and the importance of body condition. *Vet Clin North Am Small Anim Pract* 2005;35:720.