

Caring for geriatric dogs

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Improved preventive and interventional health care is leading to an increasing number of older dogs.

Veterinary practice has largely evolved with a focus on patients having single, often resolvable, disease, but as a profession we are ill-prepared for developing a health care plan for older dogs that may have multiple co-morbidities that are chronic and not immediately life-threatening.

There is little evidencebased medicine looking at optimal ways of managing co-morbid disease issues. There is also little information available on optimum routine health care for older dogs looking at strategies that may increase longevity, delay the onset of disease and reduce the requirement for veterinary intervention.

Dog size strongly influences the rate of ageing and there is general consensus that small and medium size breeds are old (senior) between 11 and 12 years and considered geriatric when above 15 years, with age-related disease occurring sooner with increasing bodyweight ([Figure 1](#)). Large and giant breeds are considered old by seven to 10 years and it is rare for giant breed dogs to reach 15 years of age ([Table 1](#)). Based on these data a giant breed dog would be considered geriatric at 11 to 12 years.

Using age alone as a definition of a patient being geriatric has potential dangers as ageing is also influenced by genetics and lifestyle, hence it is necessary to include other subjective parameters into any assessment.

Inevitably, as dogs age they will become less active, sleep more and lose some sensory perception. There is also a tendency for geriatric dogs to interact less with their environment and eat less often, with a gradual weight loss. Rate of change does not necessarily follow a linear path, but rate of progression is slow and multiple parameters are affected. Significant changes over weeks to a few months should be viewed with suspicion, suggesting there is disease beyond the

normal ageing process, particularly if one area is affected significantly more than others. Specifically, sudden weight loss, marked behavioural changes, increased water intake or reduction in activity requires further investigation.

Chronic diseases such as progression of osteoarthritis (OA) or dental disease are the most difficult to distinguish from normal ageing. Decisions to intervene are facilitated by regular check-ups that should be every four to six months in geriatric patients, associated with a standardised and repeated quality of life assessment at each visit.

Optimal nutrition for maintaining health in geriatric patients is unknown. As dogs age digestive function declines, starting as early as seven to eight years of age and resulting in effectively a lower digestible energy ([Figure 2](#)). Chronic disease may increase energy demands and inactivity lowers them. The gross energy requirement is therefore difficult to calculate and is best managed by ensuring bodyweight and condition is maintained.

Appetite will often be reduced in geriatric patients and this has led to diets being formulated with increased digestibility and palatability through protein and carbohydrate source and reduced fat. In addition, efforts have been made to manage some common ageing changes, such as reduced renal and cognitive function, ability to scavenge free-radicals and sarcopaenia by altering levels of amino acids, essential fatty acids, vitamins and minerals.

Many owners (and some vets) believe routine worming and vaccination in elderly patients is unnecessary. However, in a study around 2.5 per cent of dogs aged above 10 years were found to have *Toxocara* eggs in their faeces (Batchelor et al, 2008) suggesting the risk/benefit ratio is still in favour of worming, particularly in older dogs that may be gradually losing weight and whose appetite is poor.

Whether to continue vaccinations requires careful consideration in geriatric dogs as some have little or no contact with other dogs. The consequences of low contact are:

- Risk of meeting infectious disease is low.
- The immune system is not stimulated by meeting low levels of wild-type infection, so anamnestic response will be poor.

This low risk needs to be balanced against:

- The consequences of infection in a geriatric dog with age-related reduction in the immune response and potentially other intercurrent disease.
- Risk of a significant adverse reaction (approximately 0.1 per cent to 0.01 per cent).

- The effect that not vaccinating will have on the frequency of routine check-ups.

On balance, for dogs living in a stable household that receive routine health checks the risks/costs outweigh benefits. But such dogs are particularly vulnerable if a new dog, especially a puppy, is brought into the household. For all other geriatric dogs, benefits of vaccination are likely to outweigh risks.

Ideally, geriatric patients should have an individualised care plan centred around what is known about any chronic disease issues – central to this is an easily accessible table that includes known/suspected diagnoses, current status and medication ([Table 2](#)).

Should medication changes be required, this reduces the likelihood of drug interactions taking place, such as administration of glucocorticoids for collapsing trachea in a patient already on NSAIDs for chronic OA, for example.

Equally, if a new issue is identified its impact on other known disease states can be assessed; that is, development of congestive heart failure in a patient with chronic renal disease requires careful consideration of the type and level of diuresis prescribed and the effect that vasodilation may have on glomerular blood flow.

This care plan should include an assessment of the frequency of checkups agreed with the client, along with monitoring, such as blood pressure, imaging, blood and urine testing.

For routine screening of geriatric dogs, the author would recommend:

- urine specific gravity and dipstick on a free catch sample;
- PCV, total protein and assessment of buffy coat thickness on a haematocrit tube;
- alanine aminotransferase, urea, calcium and cholesterol; and
- consider also pro-brain natriuretic peptide and blood pressure for at-risk patients.

In geriatric patients there is always a risk more testing means more abnormalities will be found.

This has three consequences, as it tends to drive:

- increasingly invasive testing with associated risks of such investigations;
- anxiety for the client; and
- difficulty in interpreting data gained and translating this into an action plan, because only partial

diagnosis is available and benefits of early intervention are largely unknown for many diseases.

Common issues in geriatric dogs

Risks of sedation or anaesthesia

Anaesthetic risk is not specifically increased by age in dogs (Bille et al, 2012), hence the assessment should be made based on the American Society of Anesthesiologists (ASA) scoring system ([Table 3](#)).

In reality, risk tends to increase with age as concurrent disease issues will tend to increase the ASA score. In some instances, procedures can be carried out under sedation – suitable sedative choices for geriatric patients are shown in [Table 4](#). When undertaking sedation the following should be considered.

Geriatric dogs are more likely to:

- be underweight and therefore have high lean body mass requiring relatively more sedation;
- have renal and hepatic disease and low muscle mass that will affect metabolism and excretion of sedative agents;
- become hypothermic during sedation due to low body fat;
- be dehydrated, which will affect subcutaneous absorption and cause hypotension; and
- have other intercurrent issues, especially cardiovascular disease, that will affect their response to sedation.

Cutaneous lumps and bumps

Appropriate management depends on whether the owner would consider surgical intervention.

However, it should be emphasised that if a “no surgery” decision is made initially a later decision for surgery is likely to carry greater risks (as well as costs and longer recovery time).

Ideally, informed decisions should be made based on the position, rate of growth and cytology of all masses as palpation has poor sensitivity as a diagnostic tool.

Dental intervention

The benefits of dental intervention in terms of reducing pain, infection and improving appetite are

relatively easy to evaluate.

The risks are more difficult to quantify – is the bacteraemia associated with cleaning more or less risky than that associated with daily eating? What are the real risks of such a bacteraemia and anaesthesia on kidney function in an individual with chronic kidney disease as consequences may not be evident for weeks or months following the procedure? There is no evidence prophylactic antimicrobial treatment will alter this risk as part of a general cleaning and tartar removal procedure. However, if gross infection is present then treatment for seven to 10 days before the procedure is advisable.

Weight loss

Weight loss is a common problem in geriatric dogs and [Table 5](#) seeks to benchmark these changes and suggest appropriate levels of intervention.

Spotting and managing cognitive dysfunction

There is increasing recognition of “senility” as a problem in older, particularly geriatric, dogs. Clinical signs can often be subtle and involve several changes in behaviour. It can also be difficult to distinguish early signs of cognitive dysfunction from structural disease that is affecting brain function ([Table 6](#)).

Signs of cognitive dysfunction have been recognised in 65 per cent of dogs aged 15 to 16 years old and commonly include disorientation, changes in interaction with the owner and other pets, changes in sleep/wake cycle, house soiling and activity.

Increasing agitation, altered response to stimulation, altered interest in food and decreased ability to perform learned tasks are also described.

These changes are associated with structural alteration in the brain at postmortem including cortical atrophy, ventricular widening and plaque accumulation.

Management is based on dietary manipulation increasing antioxidants, mitochondrial cofactors and co-enzyme Q, use of drugs such as selegiline or propentofylline and vitamins/nutraceuticals (vitamin E, pyridoxine phosphatidylserine and ginkgo biloba). Benefit has been shown in dogs using these regimes.

References and further reading

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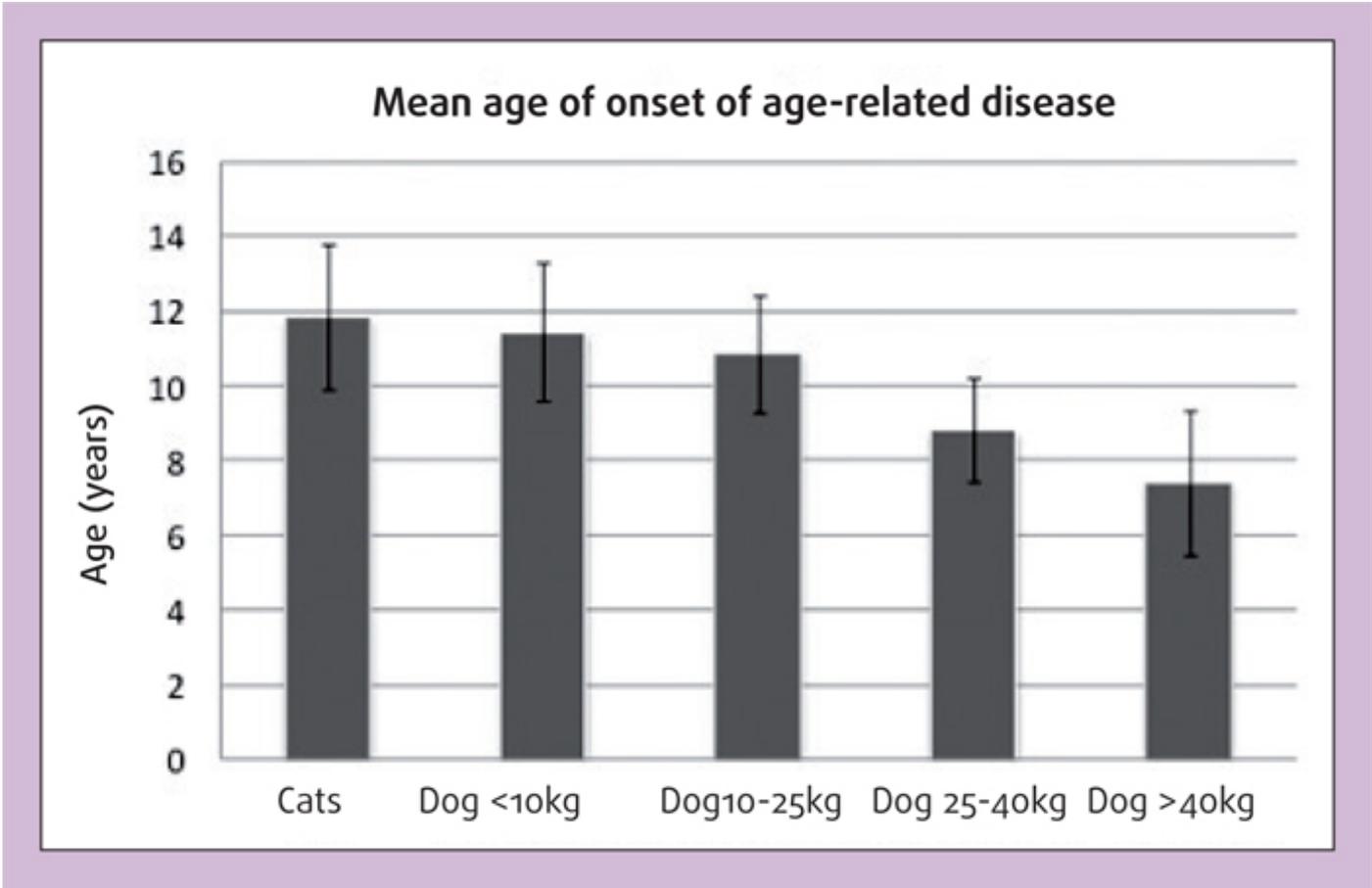


Figure 1. Onset of age-related disease in dogs.

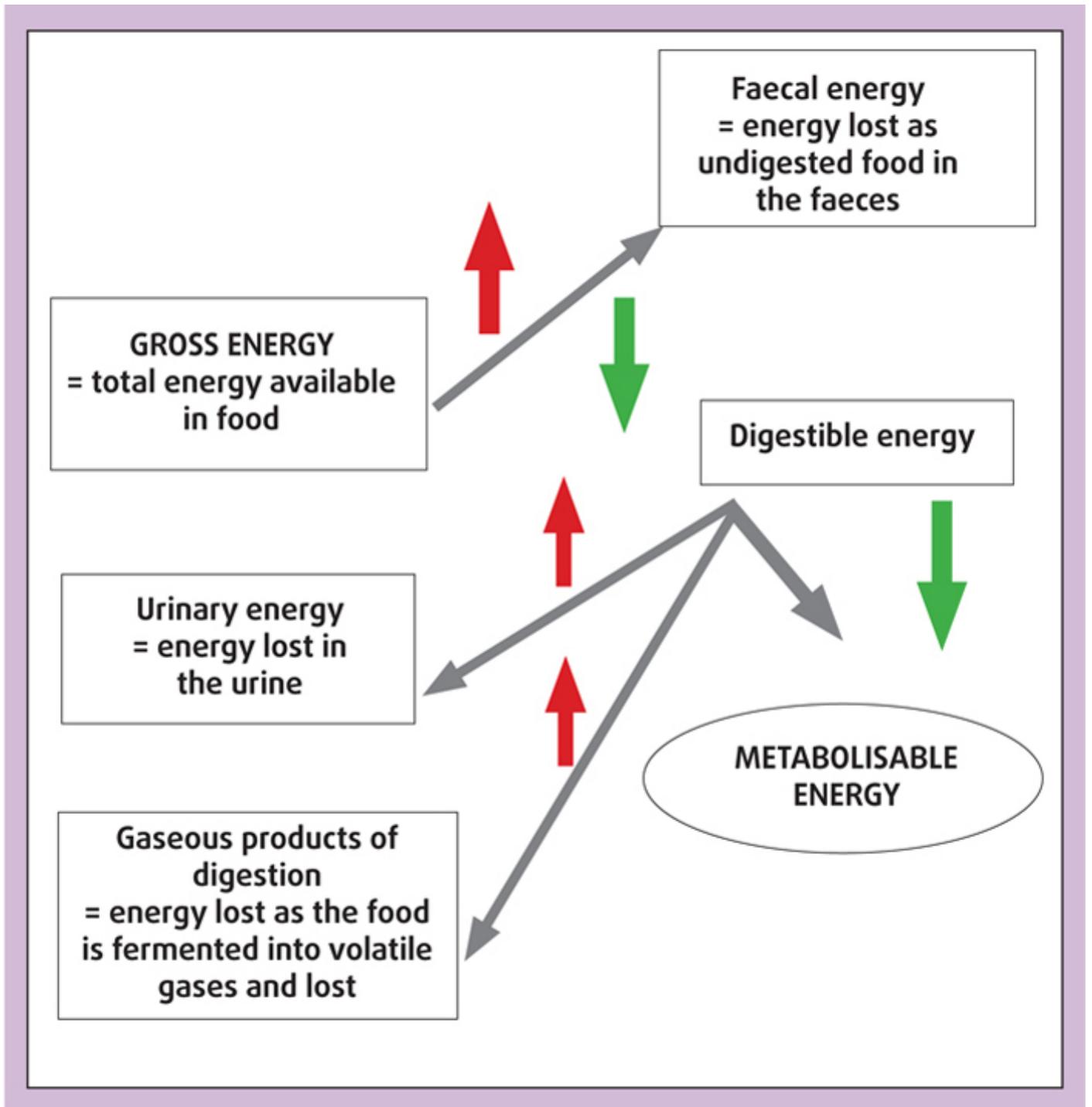


Figure 2. Changes in conversion of gross energy to metabolisable energy with ageing. Up arrows indicate increase losses; down arrows decreased conversion to metabolisable energy. Arrow width

approximates to magnitude of effect.



Misty, a 13-year old collie cross – fit and well on a Peak District hike.



Jasper is an 11-year-old springer spaniel with benign prostatic hyperplasia and chronic ocular inflammation.



Archie, a 13-year-old border terrier, has chronic diarrhoea and hypothyroidism.



Wilf, a 15-year-old, blind and deaf Cairn terrier.

P<0.0001	% alive at >10 years	% alive at >15 years
Small breeds	38	7
Giant breeds	13	0.1

Table 1. Canine life expectancy

Condition	Status	Treatment
Elbow OA	Currently well controlled	Robenacoxib (40mg PO q24hr), glucosamine and chondroitin; occasional tramadol
Degenerative disc disease	Currently well controlled	
Hypothyroidism	Waiting follow-up thyroxine levels in four weeks to increased levothyroxine dose	0.4mg levothyroxine PO q12hr
Grade II mast cell tumour removed right rib 6	Remission	No treatment
Chronic multidrug resistant coliform urinary tract infection	Currently culture negative	None
Right-sided, grade II-III, harsh, localised murmur – PMI mid-apex base	Observe	None
Mild, bilateral incipient cataracts	Observe	None
Weight loss and reduced appetite	Under investigation	Omeprazole
<p>Treatment alerts: Care with immunosuppressive drugs risk of recurrence of UTI. Care with glucocorticoids – recurrence of UTI, cardiovascular disease, current NSAID use. Adverse reaction to gabapentin – marked sedation.</p>		

Table 2. Summary health status for a 12-year-old, neutered female, Labrador retriever dog

1. Healthy dog
2. Dog with mild systemic disease
3. Dog with severe systemic disease that is not incapacitating
4. Dog with severe systemic disease that is a constant threat to life
5. Moribund dog not expected to survive 24 hours with or without operation

Table 3. American Society of Anesthesiologists (ASA) categories

Agent	Dose rate	Route	Level of sedation and pain relief	Risks
Acepromazine + buprenorphine	0.01mg/kg to 0.02mg/kg 0.01mg/kg	SC, IM or IV	Mild	ASA 1-3
Acepromazine + butorphanol	0.01mg/kg to 0.02mg/kg 0.15mg/kg to 0.2mg/kg	SC, IM or IV	Mild	ASA 1-3
Acepromazine + methadone§	0.01mg/kg to 0.02mg/kg 0.2mg/kg to 0.3mg/kg	IM or IV	Mild-moderate	ASA 1-3
Medetomidine* + ACP + opiate	5mg/kg to 10mg/kg Can be repeated once	IM or IV	Moderate	ASA 1-2 Normal cardiovascular function
Methadone§	0.2mg/kg to 0.3mg/kg	IM	Variable	ASA 4-5
§ – can substitute with slow IV morphine 0.2mg/kg to 0.4mg/kg (excitement more likely). * – use half the dose rate for dexmedetomidine. Sedation can be combined with local/regional anaesthesia.				

Table 4. Suggested sedative combinations for geriatric dogs

Screen result	Action
<2% weight loss from last measurement, but significant hyporexia	Consider diet change to improve palatability, recheck patient in two to three months
2% to 5% weight loss without changes on initial screening	Increase calorie intake by 10% to 15%, consider change in diet to increase digestibility and institute monthly weigh-in
2% to 5% weight loss with changes on initial screening, but no localising signs	Perform detailed screening – further investigation of changes found, plan will depend on disease process involved
2% to 5% weight loss with changes on initial screening and significant hyporexia	Perform detailed screen and consider a more complete dental examination under anaesthesia including radiographs
5% to 10% weight loss regardless of screening results	Perform detailed screen – further investigation of changes found plan will depend on disease process involved
10% to 20% weight loss regardless of screening results	Perform detailed screening and investigate changes found. If detailed screening is unremarkable extend screening further to include vitamin B ₁₂ , trypsin-like immunoreactivity, canine pancreatic lipase immunoreactivity, thoracic and abdominal imaging
>20% weight loss	Accurate diagnosis becomes important, intestinal biopsies may become necessary

Table 5. An approach to weight loss

Systemic illness	Structural brain disease	Reduced sensory acuity	Primary behavioural problem
Thyroid disease Pain Chronic renal disease Hepatic encephalopathy Urinary/faecal incontinence	Granulomatous meningoencephalitis Neoplasia	Loss of hearing or vision Reduced sense of taste and smell	Aggression Separation anxiety House soiling Compulsive disorder

Table 6. Differential diagnosis of cognitive dysfunction

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