



WALTHAM™ pocket book of responsible pet ownership







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**responsible pet
ownership**

Edited by:
Dr. James Serpell
Dr. Sandra McCune

Written by:
Dr. Sara Kelly
Dr. Sandra McCune

With thanks to Dr. Abigail Stevenson
for intellectual input and support

Contact:
WALTHAM Centre for Pet Nutrition
Waltham-on-the-Wolds
Leicestershire
LE14 4RT
United Kingdom
email: contactwaltham@effem.com

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DISCLAIMER

This book was written to inform the reader and is not a medical guide. It should not be used as an alternative to seeking veterinary consultation or intervention where necessary.

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Foreword

You become responsible forever for what you have tamed.

Antoine de Saint-Exupéry, *The Little Prince*

Throughout history, there have always been people who enjoyed close relationships with cats and dogs. Images of people and their pets appear in early Egyptian frescoes, on temple friezes and mosaic floors from Ancient Greece and Rome, and in paintings and portraits from the Middle Ages and the Renaissance. However, these sorts of affectionate human-animal attachments have never been more common and widespread than they are today. In the USA alone, approximately 60% of households now owns one such pet and roughly 40% owns more than one. And as their numbers have grown, so too has the quality and intensity of our relationships with these animals. Whereas they were once appreciated primarily for the practical tasks they performed — such as controlling mice, in the case of cats, or numerous variations on hunting, herding and guarding in the case of dogs — they are now valued principally as sources of nonhuman companionship. In surveys of current owners, the vast majority of respondents describe their pets as 'members of the family', and many claim to find the company of these animals more rewarding than that of their human family members.

Such claims should not be discounted or trivialised. An increasing range of scientific studies has begun to document the positive physiological and psychological impact of human-animal interactions (HAI) on both owners and their pets, and it now appears likely that these animals make a substantial, though often unacknowledged, contribution to the health and well-being of pet owning individuals and societies throughout the world. For decades, medical researchers have demonstrated the remarkable beneficial influence of supportive social relationships on human mental and physical health. The findings from HAI research now indicate that such effects can and should be extended to encompass nonhuman as well as human social support.

But as with any kind of relationship, some are better than others. For a variety of reasons — lack of knowledge, unrealistic or misguided expectations, inadequate planning and preparation, housing or financial constraints, behavioural incompatibilities, and so on — too many of these relationships fail, and these failures not only compromise the welfare of the animals but also create major difficulties for society. Pet abandonment, relinquishment and overpopulation are worldwide problems that bring untold suffering and premature death to millions of companion animals annually, while also stretching the limited resources of the organisations tasked with dealing with these issues. Companion animal behaviour problems due to inadequate or inappropriate early socialisation and training are also a significant source of conflict and disharmony between people and pets. And even when human-pet relationships remain intact, they are not always as mutually rewarding as they should be. Again, lack of knowledge of the animals' basic needs and behaviour, and outdated or

misinformed ideas about training and care, can often lead to poor outcomes for both the animal and its owner.

So what then does it take to create a successful and rewarding human-pet relationship? Fortunately, as this compact and informative WALTHAM™ pocket book describes, the recipe is not that difficult or demanding, though it does require forward planning and a certain amount of basic homework. Like parenting, especially for those who are new to it, pet ownership presents certain challenges, most of which can be overcome or minimised by following relatively simple rules and guidelines. Pet ownership is also a significant responsibility. When we acquire a dog or a cat, regardless of the source or circumstances, we accept a moral obligation to care for it properly and safeguard its health and welfare. The term, “responsible pet ownership” can sometimes sound judgmental or paternalistic, particularly when applied cross-culturally, but it is difficult to come up with an alternative term that adequately encapsulates the sense of mutuality that characterizes successful human-pet relationships. Domestic animals are clearly not just objects to be used and discarded according to human whim or convenience. They are sentient beings with feelings and desires of their own, and it is our recognition of those feelings and desires that makes relationships with them both possible and potentially beneficial. The key, then, is to achieve mutually fulfilling partnerships with these animals by understanding and catering to their needs, thereby optimising both their health and quality of life and our own.

With this important outcome in mind, this handy WALTHAM™ guide leads the reader through the essential steps towards successful and responsible pet ownership, beginning with the initial acquisition of either a puppy or kitten or an adult cat or dog, and followed by comprehensive guidance on how to provide for a pet’s medical, dental, nutritional, social and behavioural needs throughout its life. The book also addresses some key, but often overlooked, issues including the importance of pet identification, pain management, environmental enrichment for indoor cats, and safe car travel. Finally, it concludes with a brief summary of the latest discoveries relating to the human health and economic impact of pet keeping, pets in the work place, and the therapeutic benefits of animal-assisted interventions.

James A. Serpell

Marie A. Moore Professor of Ethics & Animal Welfare, University of Pennsylvania School of Veterinary Medicine

April 30, 2017.



WALTHAM

For over 50 years, the WALTHAM Centre for Pet Nutrition has been a leading authority within the field of pet nutrition and care. WALTHAM™ science and publications have been instrumental in helping define the nutrient requirements of companion species and understanding the special relationship between pets and people.

WALTHAM™ scientists work in partnership with the pets at the WALTHAM Centre for Pet Nutrition to conduct pet-focused research to support Mars Petcare. WALTHAM™ delivers scientific breakthroughs in the areas of pet nutrition, health, well-being, behaviour and human-animal interaction. In collaboration with global scientific institutes and experts the WALTHAM™ team of carers, scientists and trainers support leading Mars Petcare brands such as ROYAL CANIN®, PEDIGREE®, WHISKAS®, IAMS®, EUKANUBA®, NUTRO®, CESAR®, SHEBA®, AQUARIAN®, WINERGY, BANFIELD® Pet Hospital and the WISDOM PANEL®.

The last few decades have seen rapid changes in attitudes towards companion animals. The role of animals in the home has changed with increased integration into the family, and stronger emotional attachment between people and pets. Owners can devote significant time and resources to care for their pets. This is a global trend although it is more pronounced in some cultures and societies than others.

There is a well-established body of scientific evidence demonstrating that pets can make our lives better, yet such relationships also bring significant responsibilities. Pet ownership brings a moral, and in some cases, legal responsibility to ensure the good health and well-being of the pets in our care. This responsibility extends across their lifespan, from welcoming them into our home, through to making difficult and emotionally demanding end of life decisions.

This booklet aims to help people who choose to share their lives with pets (and more specifically cats and dogs) to successfully manage this relationship, encouraging the development of an enriching and emotionally rewarding bond between people and their animal companions.

www.waltham.com





Introduction

Pet ownership, besides being great fun, can be life enhancing in many different ways. Research has shown that pets can provide health and well-being benefits, and can help connect people with their local neighbourhoods. Scientists studying this special relationship have discovered that owners and pets benefit most when the owner-pet attachment is strong. The strength of this bond is built upon the care and love an owner devotes to his or her pet, and the love and support received in return.

At Mars Petcare, responsible cat and dog (pet) ownership is defined as 'The responsibility of an owner to take good care of the needs of their cat/dog throughout their life'. This includes creating the right conditions for a happy, healthy, well socialised and well-behaved cat/dog that enriches their family's lives and society as a whole, while minimising any potential risks they may pose to the public, other animals or the environment.

Responsible pet ownership should be shared by all pet owners. Shortcomings in cat and dog care can have a negative impact on the welfare of these animals, and, in serious cases, may lead to suffering. Beyond the implications for individual pets, irresponsible ownership can have negative societal consequences. Pet ownership is a big commitment that should be taken seriously. With the right knowledge and level of dedication an owner will gain a happy, healthy, well behaved and loving family member who is a pleasure to spend time with.

This pocket book provides an overview of the four essential pillars that Mars Petcare believes underpin responsible pet ownership, and which help to create a better world for pets:

1. preparing and caring for the new arrival
2. nutrition and healthcare
3. pet welfare
4. pets in society.







Preparing and caring for the new arrival

Making the decision to own a cat or dog is exciting and also life changing. To ensure the best start, it is important to consider which particular pet characteristics are best suited to the family's needs, lifestyle and home environment (for a summary see Figure 1). A good match will mean that the health and welfare needs of the pet can be fully met, and in doing so the family will gain a variety of benefits from the strong and mutual bond that develops.

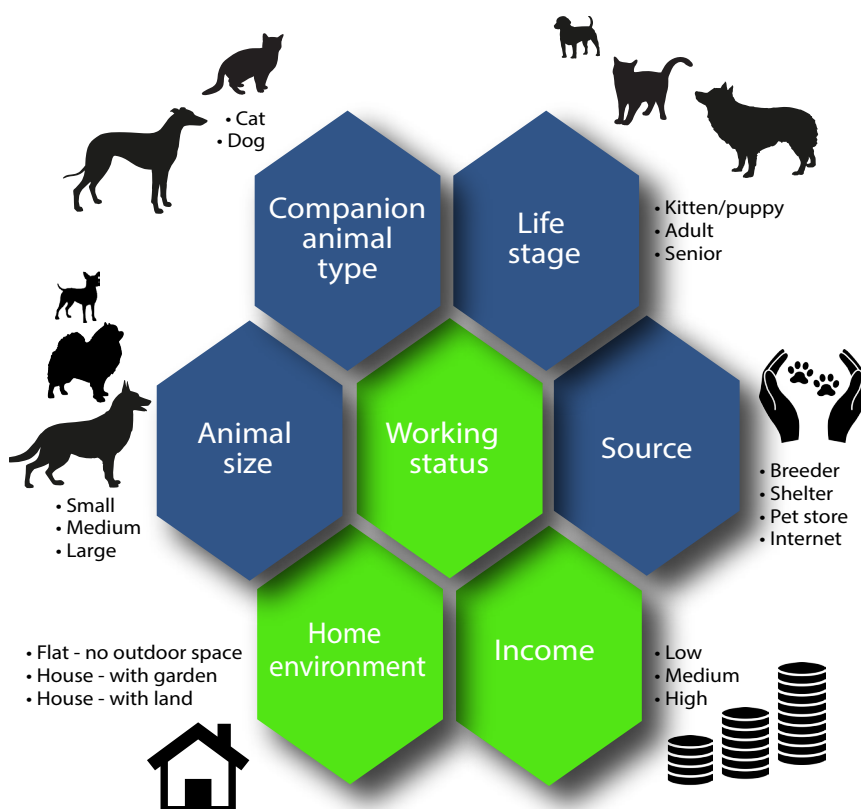


Figure 1. Some of the major pet-centred (blue) and owner-centred (green) factors that can influence the success of the pet-owner relationship.



Responsible sourcing of kittens and puppies

Pet ownership begins with choosing a pet type or breed from a reliable provider. Poor breeding practices can lead to cats and dogs with a higher prevalence of behavioural problems and health issues^[1,2], which can have a significant long-term impact on the quality of the relationship between a pet and its adoptive family. It is therefore critical to take time to understand the options available and, through appropriate research, identify a reputable source.

Cats and dogs can be acquired from a variety of different sources, including professional or hobby breeders, animal shelters, newspaper adverts, pet shops, pet superstores, friends/neighbours, and increasingly from the internet. New owners often prefer healthy, happy kittens or puppies, but many adult or senior animals, or individuals with special care needs can also make very successful pets. The best establishments give careful consideration to factors such as welfare, well-being, health, disease prevention (including responsible breeding and preventive care for both the parents and offspring), temperament, socialisation and genetic screening, as well as to the individual care and placement of cats and dogs in responsible homes with well-suited lifestyles.

Unfortunately, establishments that show little regard for the welfare of kittens and puppies and their parents are not uncommon, and these are best avoided.

High-volume commercial breeding facilities, often referred to as 'puppy mills' or 'puppy farms', produce tens of thousands of puppies for sale every year and conditions can vary widely. Puppies from high volume breeding facilities are more likely to be sold in pet shops or over the internet. When health and welfare conditions are poor, there is the potential to cause stress^[3,4,5], which can impact brain development in young animals, manifesting later in life as abnormal social and fear-related behaviour^[6,7]. Poor husbandry practices and failure to apply basic, routine health measures such as immunisation and de-worming can adversely affect health. There is also an increased risk of preventable infections such as parvovirus, an often fatal disease.





A reputable establishment selling kittens and puppies will be able to provide full details of the conditions in which they were bred and information about their parents. They will also ensure that their employees are appropriately trained, their premises meet necessary care and welfare conditions, and enable animals in their care to express natural behaviour. The pets they sell will also be under regular veterinary supervision.

Small scale cat and dog breeders also vary in their standards and practices, so similar care is needed when approaching individual breeders. Here are our top tips for selecting a happy, healthy kitten or puppy:

- Ask to visit the puppy or kitten in the environment in which they have been born to assess whether their husbandry standards have been adequate

- Make an assessment of the puppy or kitten's general condition. Check for signs of ill-health, such as underweight or thin body condition, presence of external parasites such as fleas, runny eyes or nose, dirty ears, a dirty or sore area under the tail which may indicate that they are suffering from diarrhoea. The kitten/puppy, their siblings and their parents should look well, with bright eyes, a good coat and be able to move around easily
- Enquire about what socialisation experiences they have had in their first 8 weeks of life. For example, have they interacted with adult people of both sexes, children and adolescents, and other cats/dogs? Do they live in a home environment where they are exposed to normal noises such as a washing machine or television?
- Enquire about what health checks have been carried out. What vaccinations has the kitten/puppy received? Confirm whether they have had appropriate worming treatments





- Ask to meet the mother (and, if possible, the father) to assess their temperament and general condition. Behavioural traits such as aggression, nervousness and fearfulness have heritable components^[7,8]. Equally, if the parents are of a friendly and confident disposition, there is more likelihood that the puppies and kittens will be too. If an opportunity to view the mother with her young is not provided, this may reflect deliberate concealment of poor breeding decisions, compromised welfare or a poor quality environment
- Assess how well the mother interacts with her kittens/puppies and identify any indications of stress, nervous behaviour or poor maternal care
- Genetic screening for pets to identify potential health issues and confirm breed line is becoming popular in some countries. However, it may not always be practicable to test potential pets in this way. Consult your veterinarian to find out if there are genetic services available in your area that could help with pet selection
- If there are any doubts walk away, however hard this may be. Buying a puppy from an establishment with poor standards of care will provide funds to continue these practices. If appropriate, consider reporting the facility to the local animal control authorities.

If prospective owners are not sure where to start, consult a veterinarian or contact

your National Kennel Club or cat breeders association. Most countries have such organisations and they may be able to provide a list of reputable breeders as well as guidance on important questions to ask a breeder about the health, care and welfare of the puppy/kitten and parents. Reputable animal charities in some countries provide puppy contracts for breeders and buyers which are endorsed by animal rehoming and welfare charities and veterinary organisations.

Use a clean, secure, and comfortable carrier with a non-slip liner when bringing a new pet home so that it is as stress-free as possible. Establishing some similarities between the environment of the breeder and the new home can help to make a smooth transition. The transfer of scents (e.g. in the form of bedding from the breeder) and encounters with the new owner whilst the kitten or puppy is with the breeder can be very effective in helping with the move. Using a crate for the pet to return to can also help. This restricts the size and complexity of the environment the animal pet has to adjust to, and provides a comfortable, safe and secure refuge^[5].

The use of a crate can be gradually reduced once the puppy becomes comfortable in its new surroundings, although given the opportunity many pets will continue to use this as their quiet, safe place to rest and sleep even when adult. Crates should be associated with positive experiences and never be used to confine pets as a punishment. If you plan to allow your cat outdoors, it should be kept indoors until



it becomes relaxed in its new home and then slowly introduced to the outdoor environment under supervision.

Cats and dogs from rescue centres (shelters)

Adopting a cat or dog from a rescue centre can be extremely rewarding. They are a great place to find neutered, vaccinated and house trained cats and dogs who make excellent pets, including individuals with special care needs. Adoption of a pet from a shelter helps provide the pet with a secure and loving home, as well as creating space within the centre for another animal in need. A good shelter will prepare a prospective pet for transition to its new

home, and will take time to identify and address potential behavioural issues, if any exist^[5].

Many will also try to match a pet with its new family to maximise the chances of success. This may involve completion of a questionnaire, a home visit and meetings with existing pets on neutral ground to ensure compatibility. Some shelters offer classes for new owners to assist with ongoing training. These sorts of initiatives promote successful pet ownership and help to reduce the risk of a cat or dog being returned to the shelter^[10]. To find good local shelters, check with local animal charities or your vet.





Home environment

Meeting the environmental needs of cats and dogs helps to ensure their optimal well-being and behaviour, good health and overall quality of life^[11]. These needs encompass not only their physical surroundings, but also their social interactions with people and other animals in the home. A familiar and predictable home in which the pet can exercise some control over its physical environment and social interactions helps to reduce stress and enables them to cope with any challenges.

When first introduced into a new home, cats in particular need to feel safe and secure. During the first few days keep

windows fastened and doors closed.

Restricting their environment to one room and gradually extending the space they have access to, can help them cope with the unfamiliarity. Once they appear to be comfortable in their new surroundings you can gradually introduce them to the rest of their environment.

A comfortable, dry and draught free space to rest, in a location where they can avoid things that frighten them, as well as a place to hide, will help them to feel safe and comfortable^[12]. Cats often seek hiding places when stressed as a way of avoiding or managing the extent of contact with other animals or people. A cardboard box (on its side) or an open cat carrier provide





ideal places to retreat, offering concealment and seclusion, while still allowing them to survey the external environment. As an added bonus, familiarisation with a cat carrier as part of their normal furniture may help make trips to the veterinarian less stressful.

Resources such as feeding and drinking bowls, litter trays and resting areas can become a point of conflict especially in multi-pet households. Providing a variety of locations for resources will increase the animal's ability to access and reduce potential conflict. If possible, provide one extra litterbox and feeding station more than the number of cats in the household. This also serves to extend the space they use within their environment, and meets their natural need for exploration and exercise. Physically separating feeding and drinking bowls from litter trays helps to maintain good hygiene levels and satisfies cats' natural tendencies to avoid feeding and drinking near where they toilet.

Cats and dogs evaluate their surroundings primarily through their sense of smell. When a cat rubs its face and body against surfaces it is laying down scent marks. To help promote calmness and feelings of safety and security, consider avoiding the use of cleaning substances that may disrupt these scents. Avoid using any ammonia-based products, as the smell may encourage them to soil in that area. It may also be useful to try commercially available synthetic pheromones (available from many veterinary practices) to provide scents that will make cats and dogs feel more relaxed.

Cats and dogs are naturally inquisitive and may expose themselves to danger if left alone in an unsuitable environment. Open windows and balconies may put them at risk of falls^[12]. As with children, hazards, such as medications, vitamins and supplements, toxic substances, including garden chemicals, poisonous plants and even some human foods like chocolate and chewing gum should be securely stored or put out of reach. Medications, vitamins and supplements should also be securely stored. Access to areas that have effective temperature control and ventilation can reduce the risk of heat stress. Dogs in particular are sensitive to heat stress and require protection from even moderately warm temperatures.

Cats and dogs thrive on positive, consistent and predictable social interactions with people. Understanding a pet's particular preferences can foster a mutually rewarding relationship. There are certain behavioural signs that indicate whether a cat is relaxed and willing to interact including; slow blinking, purring, facial rubbing, approaching and staying in close proximity, and a relaxed roll onto their side^[11,13]. Signs that dogs are relaxed and approachable include their tail being neutral and relaxed, a loose body posture with a slightly opened loose mouth and ears up (breed dependant).





Considerations for multi-pet households

So long as their environmental needs are met, most cats and dogs can live happily together in the same household. Harmonious coexistence among cats is best achieved by adopting closely-related and/or socially bonded pairs. When introducing a new pet into the home of an existing one, it is often easier for an adult animal to accept a kitten or puppy than another unrelated adult^[14]. Introducing the scent of a new pet around the home, for instance via handling or bedding, will enable it to become part of the household's scent profile that will soon become familiar to the existing pet.

You can help to make the introduction of a new pet as smooth as possible and support ongoing harmonious living by:

- Carrying out introductions gradually, allowing familiarity to develop slowly. If the resident pet feels insecure, under threat, or feels a loss of control over the situation, stress and conflict can occur
- First introductions should take place on neutral territory. This could be in a room that the resident pet does not favour (more likely in cats) or an outdoor area that is unfamiliar to both (more likely in dogs)
- Supervise the first meeting, which should at first be at a distance, and, particularly for cats, provide a safe hiding place where the new cat can retreat, if feeling threatened
- Before introducing a new dog to dogs already living in the home, walk





them outdoors at a distance. Initially, keep a distance of at least 6 metres between dogs as they are walked. Loop back on areas of the walk that have already been covered so that each dog can investigate the other's scent. Depending on how well they respond individually, slowly start to bring them together so that they can interact

- Praise instances of positive interaction and if they start to show early signs of conflict or stress, distract them with something that interests them (e.g. food treat or toy)
- Avoid leaving unfamiliar animals to interact alone until they have established an amicable relationship
- Providing individual resources such as sleeping places, litter trays, feeding stations for all pets, in several locations, can help to avoid competition^[15]
- Meal times in particular can be a source

of stress and conflict in multi dog households. Providing a specific place for each dog to have their meal without the threat of another dog stealing their food can reduce the risk of stress and conflict. A feeding routine can be established very quickly

- For dogs, a baby gate can be used to separate them initially. This is especially useful when they first eat in each other's company.

Taking these steps usually enables pets to form happy and amicable relationships. Feline signs of mutual affection include grooming each other (alogrooming) or rubbing against each other (allorubbing)^[11] and choosing to be in close proximity. Canine signs of affection also include choosing to be close, as well as licking each other's faces.

If problems arise, a veterinarian can often refer owners to an animal behaviourist for help and advice.





Early socialisation

Socialisation is the process by which a kitten or puppy develops the social behaviour it needs to grow into a well integrated and confident family pet^[16]. Appropriate socialisation helps them to relax and enjoy life, equips them with the resilience to cope well with the huge variety of experiences and events they will encounter and enables them to become rewarding pets.

The first weeks of life are particularly important for socialisation^[16]. There is a distinct socialisation phase (figure 2) that represents a 'sensitive period' for bonding with people. During this time they learn to enjoy the company of other cats and dogs as well as people. This is an age range where certain events are especially likely to have long term effects on adult behaviour and influence subsequent friendliness.

In cats, the primary socialisation period is from two to seven weeks after birth. In the dog, this period commences during the third week and lasts until around week 12, although it may persist longer than this in some individuals^[16]. To avoid the stress of early weaning, and to allow them time to gain appropriate social experience with their mother and siblings, puppies and kittens should not be re-homed before they reach 7-8 weeks of age^[17]. However, given that the socialisation period may already be past its peak at this stage, it is vital to obtain them from a reputable source (as outlined above) that takes account of the need for early handling and social experience.

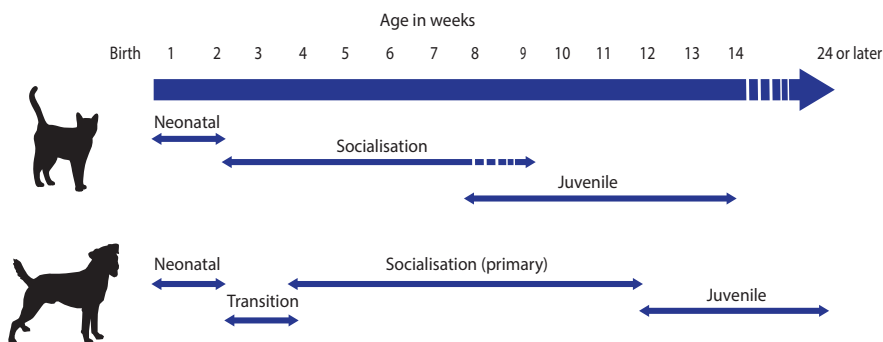


Figure 2. Phases of development including the socialisation period in the domestic cat and dog (adapted from^[16]).



Breeders have a responsibility to provide their puppies and kittens with positive experiences that equip them with the best chance of growing into well socialised, well-adjusted rewarding pets. It is important to note however, that the process of socialisation continues well into the juvenile period (2-4 months in kittens; 3-6 months in puppies)^[16] beyond rehoming, and new owners also have a responsibility for continuing the education and socialisation started by the breeder. At first, the number of experiences should be few, then increased over time and repeated once they gain in confidence. Unvaccinated puppies do not need to be isolated from other dogs. Indiscriminate exposure to unfamiliar dogs is obviously unwise, but controlled positive exposure to familiar, vaccinated dogs is highly beneficial and should be encouraged.

Providing kittens with plenty of physical contact from their new family and others, will help ensure that a kitten grows into a friendly adult cat^[13,18,19]. Interacting with kittens in the presence of their mother also aids their socialisation if she is friendly towards people^[16]. Other important socialisation experiences for both kittens and puppies include exposure to people of different ages including children, in a variety of different settings, as well as exposure to a range of noises and objects commonly encountered within the home^[20].

Contact of kittens with other cats, puppies with other dogs, and dogs with cats, are valuable aspects of a good socialisation plan that helps ensure a young pet grows into a confident and comfortable adult when

encountering other animals in everyday life. Try to ensure that other cats/kittens are vaccinated and healthy when first exposed during the socialisation period. Cats and dogs also need to be relaxed and comfortable with being touched all over, including having their ears, mouth and feet examined. This will make visits to the veterinarian far more pleasant for them and for the owner. Companion animal charities such as International Cat Care, and veterinary service providers such as Banfield Pet Hospitals (USA) provide helpful tips for owners on how to make essential veterinarian trips a better experience for their pet^[21,22,23].

Puppy parties or puppy training classes involving certified trainers are a great way to improve a puppy's life skills^[20]. They are specifically designed to give opportunities for socialisation in a non-threatening environment, and can help educate both the owner and the puppy. They can also help the owner to understand their puppy's normal behaviour and how to act appropriately if problems do arise. Veterinarians can usually refer owners to a class that they know is credible.



House training

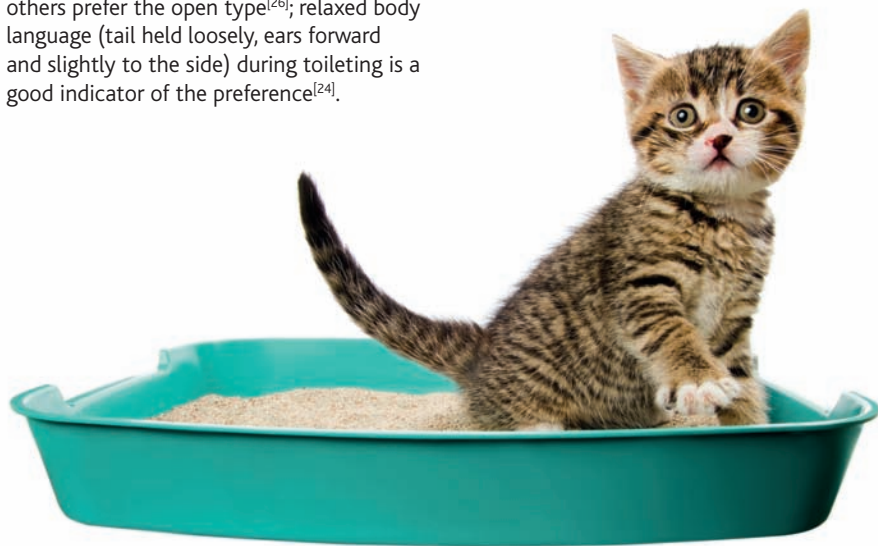
Toilet or house training is a key aspect of the transition of kittens and puppies into young adults. Effective training can help to avoid hygiene issues as well as tension between owner and pet.

Kitten

Kittens usually need very little toilet training and if given the opportunity will often be using a litter tray by the time they are re-homed^[24]. Before bringing a kitten home, a litter tray should be prepared in advance^[25]. Just one introduction is often all that is needed for successful toilet training. Thoughtful design and management of the litter tray will encourage appropriate toileting behaviour^[24]. The size of the tray provided should be appropriate for the size of the cat and, in general, bigger is better. Some cats prefer an enclosed tray whilst others prefer the open type^[26]; relaxed body language (tail held loosely, ears forward and slightly to the side) during toileting is a good indicator of the preference^[24].

However, open litter trays are advised wherever possible as it is easier to monitor the need for cleaning. To maintain acceptable hygiene levels, waste should be removed at least once a day and litter topped up as required. Litter trays should be kept where dogs or children cannot access them. Always use appropriate hygiene when handling animal waste and wash hands after cleaning.

Cats may exhibit a preference for a particular type of litter; some cats find aromatic litters or litter deodorisers offensive. A cat's preference can be assessed by providing several trays containing a range of different litters. Cat behaviourists suggest litter trays should undergo weekly washing and replacement of the litter^[24].





There are cat-friendly disinfectants that can be used as some detergents are toxic to cats or, if preferred, hot water and a cat safe detergent can do the same job. For cats that can go outdoors, providing an area of earth in the garden enables them to dig to create a toileting area. This can also help reduce the likelihood of them creating a toileting area in a neighbouring garden. If there is a children's sand pit in the garden, this should be covered over when not in use to prevent cats from accessing it.

Puppy

Toilet training of puppies is a more involved and lengthy process with some breeds and individuals easier to train than others. An awareness of what is required—and being prepared to invest the time needed to establish good, predictable routines—is the key to success. Puppies generally need to urinate just after waking from a nap and will need to be taken outside immediately. Puppies have weak bladder control and need to urinate often (every 1-2 hours), and may spontaneously urinate if they are playing or become excited. Their digestive tract is also stimulated by eating, and they will usually need to urinate and defecate shortly after a meal (within 15-30 mins). They are naturally disinclined to urinate or defecate within their living area and can become distressed if they do not have frequent opportunities to relieve themselves away from their sleeping area. Kennel or crate training can help establish appropriate spaces for living and sleeping. Use of a verbal cue when a puppy urinates/defecates appropriately, in combination with a reward, enables them to associate

toileting correctly with something positive. Puppies should not be punished when house soiling occurs. This approach, termed positive reinforcement or reward-based training, has been shown to be particularly effective in reinforcing canine learning^[27]. Ultimately, the reward can be gradually replaced by sole use of the verbal cue. Avoid a cue that is used in other situations, as this may trigger a puppy to toilet inappropriately. This is also a particularly useful command to establish for the future when the dog accompanies their family on outings and needs to understand the right time to urinate and defecate.





Nutrition and healthcare

Appropriate nutrition and a comprehensive health and wellness plan that includes regular veterinary health checks are an essential part of responsible pet ownership. Cats and dogs have specific nutritional requirements that are different to those of humans and other pets. An appropriate diet that is designed specifically for a cat or dog will ensure they get all the essential nutrients they need and the right number of calories (often termed complete and balanced) to promote health. This approach can also help to prevent health issues arising and, if they do, catch them early thereby increasing the chances of a good outcome.

Nutrition across life stages

A good diet that meets a pet's nutritional needs will enhance health and wellness through every stage of life. Meeting a pet's nutritional needs requires a carefully prepared, balanced and complete diet. If possible, regular nutritional assessment, counsel and education should be provided by a veterinary professional^[28, 29].

Continuous access to water is vital. When feeding a wet diet (usually canned or pouched food) water consumption is likely to be less than when a dry diet (biscuits or kibbles) is fed.

The nutrient requirements of a cat or dog change with their life stage^[29, 30]. It is also important to consider the lifestyle of the pet – how active they are – so the food they eat can be matched with the energy they expend. An inadequate energy intake will be detrimental to the health and performance of the pet, ultimately resulting in weight loss. Whereas an energy intake in excess of requirements, will cause weight gain, obesity and compromised health. The World Small Animal Veterinary Association's Global Nutrition Committee has produced a tool kit that includes Body Condition Score Charts for cats and dogs. They provide a helpful benchmark for recognising whether

or not your cat or dog has an appropriate body weight for its size and breed, and for monitoring changes over time^[31]. In the US, 1 in 3 dogs and cats are overweight and the figure is growing^[32]. Controlling food intake is vital for optimal body condition. For more information refer to the WALTHAM™ pocket book of healthy weight maintenance for cats and dogs^[28].

Kitten and puppy nutrition

Scientific research has demonstrated that kittens and puppies have nutritional requirements that are different to those of adult cats and dogs. This differs according to breed and age and can also be affected by neuter status. Before entering adulthood, puppies and kittens undergo a period of rapid growth and development^[30]. Feeding a nutritionally complete and balanced diet formulated specifically for kittens or puppies until adulthood will help support this. For instance, puppies need three times the level of calcium and phosphorus in their food as adult dogs do to help with healthy bone growth.

Switching to an adult diet too early can affect musculoskeletal development and can have long term effects that carry on into adulthood^[30]. It is worth noting that puppy and kitten diets are not



interchangeable; cats and dogs have quite different nutritional requirements.

Cats are considered fully grown by one year of age with little, if any, variation between breeds. The time it takes for a puppy to reach adulthood is dependent on expected adult size. Toy and small dogs will reach adulthood by around 12 months of age, whereas large and giant breeds mature more slowly and are not considered fully grown until 18 to 24 months of age. Since larger breeds generally reach maturity later than smaller breeds they require the appropriate nutrition to support their growth for longer.

Further information can be found by referring to the WALTHAM™ pocket book of puppy nutrition and care^[30].

Responsible treating

Treats developed specifically for cats and dogs strengthen the bond between the owner and pet. They offer mental stimulation and provide an incentive during training. Some also deliver additional health benefits such as oral care or joint health. To prevent overfeeding and nutritional imbalances their use should be controlled and they should make up no more than 10% of total daily calorie requirement. with the amount of food fed in the main diet adjusted accordingly^[28].

Table scraps or human food snacks tend to be more energy rich and lower in nutritional value than treats designed specifically for pets^[28] and should therefore be avoided.

Physical activity

Exercise is fundamental to maintaining strong muscles and bones and a healthy body weight, and is also a good way of achieving the mental stimulation that cats and dogs require for good health. Physical activity is particularly important for highly active or working dog breeds. However the exercise levels of puppies should be carefully monitored until they are fully grown, as excessive levels can lead to joint problems in the future.





Cats that have access to outdoor space find mental stimulation and exercise exploring the outdoors; installation of a cat flap can give them opportunity to get outdoors whenever they choose. Cats that are kept entirely indoors also require exercise and mental stimulation^[11]. They have a greater need for social stimulation from their owners compared to cats with access to outdoors and they are more likely to initiate social contact with the people they live with^[33]. Cat toys and activity posts are a great way to help entertain and exercise an indoor cat and this will also help prevent boredom.

Physical activity provides mental stimulation and reduces the risk of a pet becoming overweight or obese^[66]. The current consensus is that 20 minutes exercise a day is the minimum beneficial period, with 30-60 minutes being preferable^[67]. However, there are age and breed differences in the level of exercise required to provide appropriate levels of mental stimulation and in order to maintain fitness and a healthy body weight. When out walking a dog, varying the route increases the degree of mental stimulation provided^[66]. For indoor cats, physical activity can be encouraged through play, either with their owner or independently through toys.

Exercise can also provide an important opportunity for socialisation. When out walking dogs are exposed to a variety of different smells, sights and sounds as well as contact with other dogs and people. This socialisation helps to prevent them from

becoming sensitive to noise and deal with being separated from their owners (separation anxiety)^[34]. Some particularly active breeds need additional exercise or mental stimulation, such as agility training.

Population control

An awareness of cat and dog reproductive potential can help to ensure that they do not reproduce at random. The majority of cat litters tend to be unplanned. For owned cats in the UK, for instance, about 70% of litters are unplanned^[35]. A female cat can have up to three litters a year (5-6 kittens per litter), and a female dog is able to have two litters a year (up to 10 puppies per litter). Given the potential for such huge numbers of unplanned pets, many of which might be relinquished to animal charities and shelters, population control measures are essential.

Neutering, or the removal of the reproductive organs performed by a veterinarian under a general anaesthetic, remains the single most effective long term population control measure. The surgical procedure is termed spaying in females, and castration (neutering) in males. In most countries it is widely accepted as a humane method of population control. In some US city/local governments (Los Angeles County, city of Dallas Texas, Las Vegas City Council), spaying/neutering of most pets is mandatory by the time they are four months old, and it is illegal to allow them to reproduce without a special permit. In a number of European countries (including Germany, Norway, Sweden,



Denmark, Finland, and Iceland) neutering is considered a surgical mutilation and may be illegal unless medically indicated. Regardless of which country an owner lives in it is important to discuss options for population control with their veterinarian. Alternatives to surgical sterilisation do exist and include chemical and hormone injections or implants. If a pet remains unsterilised, the owner has a responsibility to control its breeding activity by restricting the potential of the animal to roam freely.

The benefits and potential downsides of neutering^[36] can be discussed with a veterinarian to ensure that an informed decision is made. Health benefits range from reduced incidence of some cancers to extended life span.

Neutering before maturity will often prevent the development of secondary sexual characteristics such as urine marking, sometimes seen in intact male cats and dogs. Sexually related behaviours such as mating, roaming and aggression/ fighting that can place animals at risk of injury or disease may also be reduced by neutering, at least in cats. Possible drawbacks of neutering include post-surgical complications, some medical conditions (for which research is evolving) and obesity. However, for male cats there are virtually no health conditions known to be altered by neutering. Consequently in all cases (except when the cat will be used for breeding or where illegal), a veterinarian is likely to recommend neutering.





Age of neutering in cats

Until recently the optimal age for neutering was usually between 5 and 8 months of age. This guidance is now under question as neutering in this age range may be after sexual maturity is reached; in female cats this can occur as early as 4 months of age. There are no known behavioural or physical advantages to waiting until 5–8 months to neuter^[37]. In fact, male kittens that have undergone early castration

(between 6 to 14 weeks) have lower incidences of abscesses, sexual behaviours, urine spraying and aggressive behaviour towards veterinarians. In both sexes, early neutering has been associated with reduced occurrence of asthma, gingivitis and hyperactivity^[38] and females spayed before 6 months of age have a 91% reduction in the risk of mammary carcinoma^[39]. It is always worth seeking veterinary advice when deciding if and when to neuter.

Figure 3. The essential components of a preventive healthcare programme.





Preventive healthcare

Preventive healthcare for pets is an essential part of pet health and can help to reduce a pet's risk of developing a wide range of problems. A comprehensive approach focusing on nutrition counselling, vaccinations, parasite control, dental care and behaviour counselling can help to mitigate issues such as periodontal disease, fleas and ticks, heartworm disease, obesity and diabetes mellitus^[32]. Ensuring appropriate levels of physical activity and calorie intake can reduce the risk of diabetes along with other serious diseases by helping to maintain a healthy weight^[32].

Regular 6 monthly health check-ups can also aid the early detection of diseases and other health problems, helping to reduce complications and suffering. A preventive approach can also reduce the risk of diseases that can be transmitted between pets, and from dogs and cats to people (zoonotic diseases).

Vaccinations and parasite control

Vaccinations are one of the most powerful preventive care tools and play an important role in the control of infectious disease^[40, 41] for safety of both pets and their owners. Pets can be protected from many serious, and sometimes deadly, contagious diseases such as parvovirus, feline panleukopenia and rabies. Vaccination recommendations and legal requirements should be discussed with a veterinarian and can be done as part of regular health check-ups, which should ideally occur at least every 6 months from the kitten or puppy stage.

As part of these discussions the veterinarian will carry out an individual assessment that will balance the benefit through reduced risk of infection, against the risk of an adverse reaction. The veterinarian may ask about a pet's lifestyle and that of other animals in the household. Cats living in multi-cat households with access to outdoors are likely to be at higher risk, whereas indoor cats are generally at lower risk of infection. Time spent in catteries and boarding kennels can also increase the risk. Choosing an establishment that requests that all boarders are vaccinated prior to boarding helps to eliminate this risk. In some countries there are legal requirements for animal vaccinations.

In most cases, the risk to health of not vaccinating, vastly outweighs the likelihood or severity of any adverse reaction. Adverse reactions associated with vaccination are rare, but can occur ranging from mild signs to more severe anaphylaxis. Mild side effects may include lethargy, local pain or swelling at the injection site, reduced appetite, or a mild fever^[40,41,42] and are often short lasting and self-limiting. In the unlikely event that more severe signs are noted or persist beyond 2-3 days (such as collapse, vomiting, diarrhoea, trouble breathing, facial swelling), a veterinarian should be consulted. Ensuring that vaccination programmes are up to date will give peace of mind ensuring that when a pet comes into contact with other cats and dogs they are protected from potentially serious feline and canine diseases.



Cats and dogs commonly become infected by internal or external parasites at some point in their lives (see Table 1 for a list of common parasites). This can lead to simple irritation, or can be life threatening. Some can be transmitted to humans, for example hookworm, roundworms, and toxoplasmosis. Transmission can take place via a variety of routes, including but not limited to: faecal to oral or skin transmission via contaminated soil.

Appropriate disposal of dog faeces will help to ensure that they do not infect other animals. Individuals who are immunocompromised, elderly people, small children and pregnant women should take special care.

Gloves should be worn when coming into contact with or cleaning a cat litter tray, and hands should be washed thoroughly afterwards. It is easy for a pet with a parasitic infection (e.g. roundworms, toxoplasma) to go unnoticed as they may not show any signs. Regular veterinary health check-ups and a flea prevention/de-worming treatment routine as well as good hygiene will help to minimise risk of infection for the whole family.

In some geographic areas, heartworm and tick-borne disease may pose an additional threat to animal health. Please discuss the threat of these diseases with your veterinarian to determine what prevention may be required.





Table 1: Common Parasitic Diseases

Parasitic Diseases	Symptoms	Frequency	Source of Infection	Precautions
Cryptosporidiosis (Cryptosporidium)	Watery diarrhoea, fever, abdominal cramps, nausea, and vomiting	One of the most common causes of waterborne diseases in United States. 300,000 cases per year in United States	Puppies, cats, and farm animals, contaminated food and water	Wash hands, avoid drinking or using potentially contaminated water
Giardiasis (Giardia)	Diarrhoea with stomach or abdominal cramps	Approximately 20,000 cases in the United States in 2005	Dogs, cats, cattle, deer and beavers, contaminated water	Wash hands, avoid drinking or using potentially contaminated water
Hookworm (Ancylostoma and Uncinaria)	Painful, itchy skin condition, abdominal pain	730 million people in developing countries but rare in United States	Skin contact with soil contaminated with eggs in faeces of hookworm-infected animals	Avoid going barefoot in contaminated soil, have pets checked and treated for worms
Tapeworm (Dipylidium)	No or few symptoms in people	Rarely reported in medical literature, may be misdiagnosed as pinworms	Spread when dog, cat, or human swallows a flea infected with tapeworm larvae	Treat dogs and cats to prevent fleas
Toxocariasis (Toxocara)	Ocular larva migrans (eye disease), Visceral larva migrans (swelling of body organs)	14% of population in United States infected and over 700 people experience permanent partial loss of vision yearly due to Toxocara	Dogs and cats	Wash hands, children should avoid eating contaminated soil, deworm dogs and cats
Toxoplasmosis (Toxoplasma)	Flu-like illness in healthy people, eye disease, miscarriage, stillbirth or congenital infection in pregnant women, fever, confusion, headache, seizures, nausea, and poor co-ordination in immunosuppressed individuals	Third leading cause of death attributed to food borne illness in the United States. Evidence of prior exposure in 24% of population in United States	Infected cat stools and contaminated soil	Wash vegetables, avoid undercooked meat, wash hands especially when changing kitty litter



Oral care

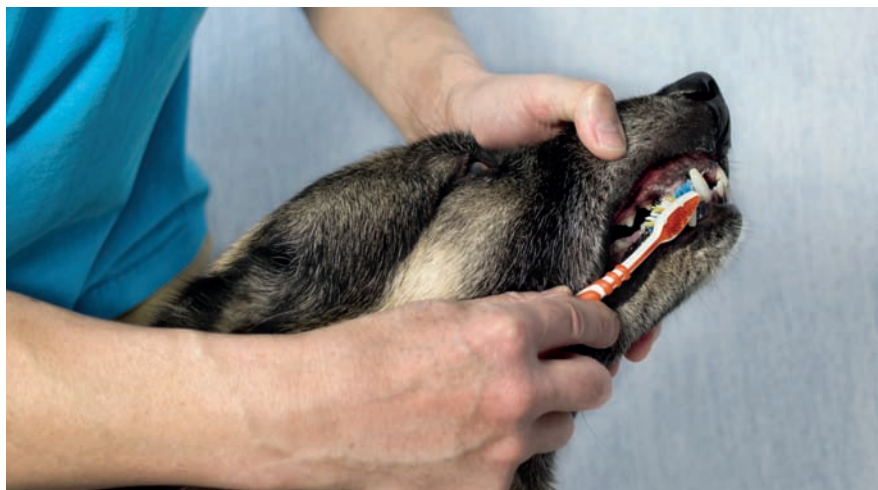
Dental disease (including gum inflammation, gum disease and dental deposits) affects nearly two thirds of all cats and dogs^[32]. Cats, in particular, may not show obvious signs of pain and discomfort associated with oral disease, so owner awareness and veterinary check-ups are key to management. Small dogs, in particular the toy breeds such as Yorkshire terriers and Chihuahuas, are more susceptible to gum disease when compared with larger breeds. The good news is that proactive care can help prevent these conditions.

Home care in partnership with veterinary dental care is important for cats and dogs across all life stages^[43,44]. Dental health checks are recommended every 6 months. These should include a veterinary examination of the teeth and gums, and annual removal of any deposits on the teeth, starting at one year for cats and

small dogs, and two years old for larger breed dogs. This is generally carried out under a general anaesthetic and will help to maintain good oral health^[43,44]. Your veterinarian may also recommend dental x-rays to evaluate for signs of dental disease that occur below the gumline and are not visible during an oral exam. Veterinarians can advise on ways to help to maintain or improve the oral health at home. Prevention early in life may reduce the frequency and severity of later disease and introducing kittens and puppies to a regular oral care regime at an early age will train them to accept or even enjoy it.

Five tips to help keep cats and dogs' teeth and gums healthy:

1. Start a daily dental care routine early, ideally at the puppy/kitten stage





2. Check the appearance of the gums; they should be pale pink (redness indicates inflammation and is a sign of disease) and assess the build-up of tartar (a discoloured deposit). Observations should be discussed with a veterinarian during the next oral health examination
3. Brush your cat's or dog's teeth - tooth brushing is the single most effective method. Tooth brushing should be introduced gradually, using a correctly sized toothbrush with medium bristles (e.g. medium-large dogs = human adult size; medium dog = child's size; toy size/minature dog and cat = small special pet toothbrush). Bacterial populations contributing to gum disease do not overlap entirely with those in humans so oral care products designed specifically for cats or dogs are necessary^[45]. Carry out in a quiet place without distractions. Time and patience are required. For best results brush at least once a day to prevent the hardening of plaque into tartar
4. Support homebased dental care routine with a veterinary dental care plan that involves an oral health examination every 6 months and professional dental cleaning at least once a year
5. Provide dental chews, dry food designed to clean teeth and toys that are recommended as safe for cats and dogs. They should not be allowed to chew on hard or abrasive objects (e.g.

bones, hard nylon chew toys or tennis balls) as these can damage teeth and gums. Do not use hard or heavy toys during play. Always monitor your pet when they are given dental chews to reduce risk of choking hazard.





Importance of healthy weight management

Since many conditions and diseases are exacerbated by being overweight, maintenance of an appropriate body weight through dietary management and physical activity is essential for good health^[28, 46]. Obesity, is the most common nutritional disorder in companion animals today and is associated with increased risk of other diseases (e.g. joint problems and diabetes) that may reduce life span^[47]. The WALTHAM™ pocket book of healthy weight maintenance for cats and dogs provides useful advice on how to ensure that pets remain at a healthy body weight^[28]. Regular weighing, exercise and appropriate nutrition are key. Any concerns about a pet's body weight or condition should be discussed with a veterinarian.

Caring for older cats and dogs

Continuous improvements in veterinary healthcare and nutrition have helped cats and dogs to live longer, and has increased the size of the senior pet population^[48]. Older cats and dogs make wonderful companions as they are often content to spend more time around the home, and tend to be more laid back and calmer than younger animals. Owners, in partnership with their veterinarian, have an important role to play in supporting quality of life in older pets. If well cared for, many cats and dogs can live into their mid-teens and some cats may even live into their twenties. Cats and dogs are considered to be in their senior years when they reach the last third of their life span.

Most veterinarians use 7 or 8 years as the cut off on average, except for large/giant breed dogs which have shorter life spans.

Energy and nutrient requirements vary with life stage, neutering status and physical activity including play, which tends to decline in adulthood. There are commercially prepared diets available that are specially formulated to meet the nutritional requirements of senior cats and dogs and are of lower calorie content with a higher nutrient density^[28]. Adjusting calorie intake through specifically designed foods helps to maintain the appropriate body weight and body condition score^[28]. Where an older cat may be experiencing a decline in appetite, warming their food slightly to increase the aroma and palatability may increase their intake. An appropriate body weight and maintained mobility can be aided by exercise, although senior dogs may need shorter and possibly less frequent walks. While it may help to encourage an older pet to exercise they should never be forced to do more than they are comfortable with.

There are a number of health, behavioural and social changes that occur with aging that may require more frequent visits to the veterinarian than the standard twice annual wellness examination and consultation^[49,50]. More frequent screening of risk factors that may require lifestyle modification, as well as early diagnosis and medical intervention, can help improve quality of life for as long as possible^[49]. Behavioural changes such as vocalisation, change in appetite or water intake, house soiling, or for cats, changes



in the use of the litter tray, may reflect an underlying medical problem that should be investigated by a veterinarian. Many veterinarians offer a senior care programme, and are very willing to discuss any concerns an owner may have about the health and well-being of their aging pet.

Top tips for maintaining the health and quality of life for a senior cat or dog:

- Provide regular twice yearly visits to the veterinarian
- Continue to provide social contact
- Carry out regular grooming and inspect claws to ensure that they haven't become overgrown
- Enable easier access to resources such as food, water and sleeping/resting areas by placing multiple dishes around the home, and ramps or steps to raised sleeping/resting areas
- Provide large litter trays with easy access and raised sides to help senior cats toilet more easily
- Provide a stable and predictable routine; older animals are more susceptible to stress
- Provide an enriched environment and support expression of natural behaviours to support cognitive function (e.g. food puzzles, toys)
- Senior pets often experience changes in their ability to maintain body temperature resulting in increased sensitivity to extreme weather conditions. Avoid the hottest times of day for dog walks. In cold weather sweaters/coats (for dogs) may be needed and heated beds or other warm sleeping spaces should be provided.





End of life

The end of a pet's life is an emotionally difficult time for many owners. The ability to adequately provide care for a cat or dog with diminishing quality of life, as well as the possible impact on other pets within the home, must be considered. Veterinary professionals are well equipped to discuss options for end-of-life care that allows appropriate time to make decisions regarding a pet in terminal decline, and to help everyone prepare. A veterinarian will assess the pet's level of comfort and best interests, as well as their specific needs as part of a care programme. This may include additional in-home care, pain management, easier access to resources (food, water, litter tray), restricted movement within the home, and a stable and consistent environment.

If necessary, a veterinarian may also offer home visits either from themselves or a veterinary nurse and may reassess the need for any ongoing medication and treatments. In addition, a veterinarian will be able to offer help and advice around the ethical decision about when and where to euthanise a pet. There are online resources (e.g. www.aplb.org), and hotlines (e.g. Tufts University) that provide information on what is likely to happen at this time and what a pet may experience.

Discussing end of life decisions with a veterinarian on diagnosis of a terminal condition, rather than waiting until the situation reaches the end point, helps to avoid as much suffering as possible.

This also gives everyone in the family some time to agree on decisions and to start to come to terms with the situation. Grieving for the loss of a much loved pet is normal and there are online sources of information that can help families cope with this^[51,52].





Pet welfare needs

Basic welfare needs can be met by providing adequate food, water, ventilation and protection from injury or ill health (see Figure 4). However, good welfare should aim to go beyond the basic requirements to include things that will enrich and improve a pet's quality of life and, in turn, enhance the overall owner-pet relationship. Enriched welfare aims to meet a pet's social and behavioural needs and strives for positive outcomes and experiences for both pet and owner. This includes providing pets with opportunities to express natural behaviour. Different ages, breeds and individual differences in behaviour may result in different welfare needs^[53].



Figure 4. The five welfare needs (PDSA (2017) PAW Report)

The minimum standards of welfare are summarised in the 'Five Freedoms'^[54].

1. Freedom from thirst, hunger and malnutrition
2. Freedom from discomfort
3. Freedom from pain, injury and disease
4. Freedom to express normal behaviour
5. Freedom from fear and distress.





Awareness and knowledge of an individual's welfare needs can help promote their well-being; Table 2 covers a summary of guidance to assist in the provision of good welfare.

Table 2. The five welfare needs.

Welfare category	Provision needs
1. Suitable environment	Adequate space and shelter, no extremes of temperature, adequate light, low noise levels, cleanliness, indoor only or access to the outdoors, provision of adequate shade when outdoors
2. Food and water	A balanced diet that meets the animal's nutritional needs at every life stage, supplied appropriately. Unlimited supply of fresh water
3. Natural behaviour	Opportunities to express most normal behaviour, including behaviour directed towards other animals and towards humans
4. Safety	Companionship and protection from conditions likely to lead to fear and distress; identification (microchip, collar)
5. Healthcare	Vaccination, internal and external parasite control, routine veterinary visits/check-ups, prompt access to veterinary care

The repertoire of visual communication signals in cats is not as extensive as in the dog, so assessing welfare can be more challenging. Behavioural changes can often be the first indicator of illness or other causes of decreased welfare. Cats are more likely to react to poor conditions by becoming inactive and inhibiting normal behaviours such as grooming and feeding rather than exhibiting obvious signs of abnormal behaviour^[55].

Negative indicators of welfare in cats include:

- The expression of anxiety and fear
- Stress related changes in behaviour including:
 - aggressive and destructive behaviour
 - excessive grooming and vocalisation
 - self-mutilation
 - loss of appetite
 - reduced grooming, exploration and play
 - hiding or reduced social interaction.



Behavioural needs

Dogs have been sharing our lives and providing us with companionship for at least 15,000 years^[56]. Cats are considered less fully domesticated as their domestication has occurred over a shorter period of time; around 10,000 years.

Despite this long history of domestication, both cats and dogs still need the opportunity to express behaviours that are linked to their evolutionary ancestry. The domestic cat's nearest ancestor is the African Wildcat and it still exhibits many of the same behaviours today^[57]. The domestic dog's closest living ancestor is the grey wolf (*Canis lupus*), although their exact lineage and evolution remains controversial and there is considerable evidence that dogs have evolved substantially through the domestication process^[58].

A behavioural 'need' is best defined as a behaviour that an animal is strongly internally motivated to perform and which is likely to be influenced by genetic factors. If an animal is unable to express these needs for an extended time, it will become frustrated^[59]. Providing companion animals with opportunities to express these natural behaviours will support good welfare and help avoid the development of a variety of inconvenient or problematic behaviours^[60]. Certain feline behavioural traits such as scratching, predation and short duration, high-intensity activity are natural components of their behavioural repertoire. Cats scratch to keep their claws in good condition by removing the blunted outer claw sheaths. Scratching is also used as a form of communication through scent signalling and through the vertical markings that are left behind. When a cat scratches





at or near points of entry or exit, this can indicate feelings of insecurity; investigation of the cause can help the cat to rebuild a stronger sense of security, if the owner makes appropriate changes. Providing opportunities for indoor cats to use scratching posts around the home can help prevent damage to furniture or curtains.

Predatory behaviour is an innate response motivated by specific sensory cues (e.g. detection of quick movements or high frequency sounds)^[61]. Although sometimes unpleasant or distressing for the owner, it is completely normal for cats to hunt and bring home small mammals and birds. Their impact on local wildlife can be minimised by keeping them indoors either entirely, or at dusk and dawn when prey species tend to be most active. A bell worn on a quick release collar has also been shown to be partially effective in reducing predation. Engaging cats in play activity that mimics the different sequences of predatory behaviour can also help to meet this basic need in another way, as well as being lots of fun.

The domestic dog has been strongly selected to live with humans and, as such, has less of its ancestral behaviour intact. Dogs are well adapted to living in family groups, with the composition of the group determined by the owner. Being a social species, most dogs prefer not to be left alone in the house for long periods. Destructive behaviour, vocalisation, and house soiling as a consequence of being

left alone are signs of sub-optimal welfare. It is critical that a puppy or new dog learns to cope with being left alone. This can be achieved by leaving them for short periods of time to begin with, even in a different part of the home initially. This teaches them that it's fine to be left alone and they can learn to use the time for rest and relaxation. A stair gate is a useful tool to use in this respect, providing separation from owners when they are at home, without being totally isolated.

A comfortable bed with food and water and toys to play with/chew can help them to feel more relaxed. Gradually increasing the length of time they are left behind the gate will help them adapt to being separated from the owner. Once they appear relaxed and happy, the owner can then start to leave the home for short periods and eventually for up to a few hours at a time. Training a dog to feel relaxed when in a suitable crate can help to keep it safe from household hazards while left alone. Making sure a young dog has been exercised, and has had the opportunity to urinate and defecate, can help it feel more relaxed and content while left at home alone.



Building the bond

Both cats and dogs can form enduring social bonds with humans^[62]. Positive human contact is usually beneficial for their welfare; probably more so than contact with other animals^[63].

The early socialisation and juvenile periods are particularly important in the development of the bond. The needs of the pet in this relationship are important but not well understood, and are the subject of increasing study. From the human perspective, this is a strong emotional and psychological attachment that is built on the enjoyment of caring for them, and the affection and devotion received in return.

These sorts of human-animal attachments have improved quality of life for much of the pet owning population, and the benefits received are greatest when the attachment is strong^[64]. Human-pet relationships show some similarities to those between parents and their children^[65]. Recent research has compared children's relationships with pets and siblings across several aspects of relationship quality^[66]. Children were found to derive more satisfaction from relationships with their pets than with their brothers or sisters. The research adds to increasing evidence that household pets may have a major influence on child development, and could have a positive impact on children's social skills and emotional well-being.

So what is it that drives us to form these bonds? Four different theories have been put forward^[67,68]:

1. Biophillic hypothesis; humans possess an innate tendency to seek connections with nature and other forms of life
2. Social support theory; the human need for love, appreciation and belonging and the desire to feel needed
3. Attachment; a deep and enduring emotional bond that connects a person to another animal (thought to be mediated by release of the bonding hormone, oxytocin)
4. Neoteny; retention of juvenile features that appeal to human's innate tendency to respond to baby-like facial characteristics.

There are many ways in which to build and strengthen the bond:

- Plan enjoyable time together. Relationships are built on spending time together and sharing experiences. Spending time having fun, either during exercise and/or play are ways to have fun whilst building the bond
- Be clear when communicating. Cats and dogs tend to focus on visual (body language) rather than verbal cues. When training, signals used need to be consistent. When there is good understanding it is easier to feel that a mutual bond exists



- Use treats responsibly. Giving cats and dogs pet treats is a good way to facilitate bonding and is useful as positive reinforcement during training. Treats should not constitute more than 10% of daily calorie intake
- Invest in training. Well trained dogs in particular have greater freedom to enjoy their life and can share more experiences with their owner as they are a pleasure to have around. Training can also help to reduce frustration as it is easier for a pet to understand what is expected from them. Training is a great way to provide cats with enrichment and mental stimulation
- Learn about pet behaviour. Take time to understand body language and facial expressions that might indicate a relaxed, happy state or stress. If a pet feels they can rely on their owner for protection and to remove them from harm if threatened, a stronger relationship will develop as a consequence
- Be aware that each pet is an individual. Become familiar with their likes and dislikes
- Provide plenty of personal contact: Physical contact such as grooming and stroking is mutually beneficial and helps owners too by making them feel more relaxed. Providing affection, routine, dependability, and meeting their essential needs will strengthen the owner-pet bond.





Training

A well-trained and socialised pet is a joy to live with. They can be more involved in their family's life, can be taken into other people's homes and join them on holiday. Increasingly companies are welcoming well trained pets in the workplace. For dogs, this also means more freedom to be off the lead to run and play and get more exercise when out walking, and less time home alone.

A well trained and socialised pet is also easier to keep safe, and helps ensure those interacting with pets are kept safe too, especially children. Training should enable a dog to learn the right way to behave so that instead of only focusing on obedience, a puppy or dog begins to understand how to make good choices^[69]. Providing them with these choices, a safe haven within the home, and a person they trust when outside the home, is key. This approach builds resilience so that they are able to cope in an appropriate manner with the unexpected and unfamiliar.

There are several key skills and attributes that help a dog cope well with life^[69].

These include:

- Confidence
- Being able to cope with surprises and with being touched
- Self-control and dealing with frustration

- Being calm
- Learning what is expected of him/her
- Being able to attend and respond to requests
- Good manners
- Making the correct choices in different situations.

When home training, owners should be calm, consistent and make the session short and regular to ensure that the dog does not become overwhelmed or bored. The use of positive reinforcement methods that reward good behaviour, and ignore bad behaviour, are particularly effective in dogs. Learning how to respond to basic commands such as 'sit', 'lie down', 'stay', and 'back off' are important for safety, particularly when out walking. Good recall when off the lead, and good lead walking are essential behaviours for quality walking and time outdoors together. Animal charities and associations can provide information and training tips, and veterinarians are willing to provide advice and recommendations of good local training classes, dog clubs and agility classes.

Cats are often thought to be "untrainable" but, in fact, are perfectly capable of learning particular behaviours. Again, patience and positive reinforcement methods tend to deliver the best results.



Exercise and play

It is important that the type and amount of exercise is tailored according to the individual pet. For example, the musculoskeletal development of puppies may be adversely affected by long walks and dogs with arthritic conditions benefit from short walks to keep the affected joints mobile and flexible without doing too much. Dogs can easily overheat, so walking in very hot weather is best avoided. This can even occur when exercising in moderate temperatures and some breeds are more susceptible than others. To avoid this, dogs should be exercised during cooler parts of the day (early morning or at dusk). A water supply is required and the person walking the dog should be prepared to rest in shaded areas.

In inclement weather, dogs require protection from the elements. Small, short-haired breeds may benefit from an overcoat that provides protection from the cold and wet conditions, and dog paws can be injured by excessively hot or cold surfaces, for instance when walking on hot asphalt/tarmac or snow and ice. Salt or grit used to de-ice pavements and roads can also cause damage to dog paws and it may be necessary to carefully wash and dry them after walking on treated surfaces paying careful attention to the skin between the pads.

Providing opportunities for play is an enjoyable way to promote optimal well-being and to strengthen the bond between owner and pet. Play provides mental stimulation as well as exercise, and is also an important way for pets to express natural behaviours. In puppies, it is also a process through which they learn socially acceptable behaviour, including bite inhibition and how to be less aggressive in social interactions^[20]. In cats, play closely resembles predatory behaviour and is stimulated by prey characteristics, such as small size, quick movement, and complex surface texture. The five aspects of object play in the domestic cat are stalk, rear, wrestle, neck flex and arch, and pounce. Mimicking the different stages of hunting behaviour can be particularly engaging for cats.

There are lots of commercially available pet toys on the market, and having a selection of these can keep play interesting. Cats in particular can become bored when items start to lose novelty. Practical ways of encouraging play, rewarding activity and interaction as well as encouraging them to work for their meal include hiding food in multiple locations and providing food puzzles.



Five top tips for fun, safe play:

1. Choose the time to play carefully - the best time for play is often when cats and dogs are well rested and are seeking human interaction
2. Give lots of praise and encouragement – this helps make the experience fun and rewarding
3. Encourage appropriate play – avoid scratching or nipping and stop play immediately if inappropriate behaviours are displayed
4. Have fun, but avoid over excitement or chasing, particularly when children are involved
5. Keep play at ground level to avoid jumping up.



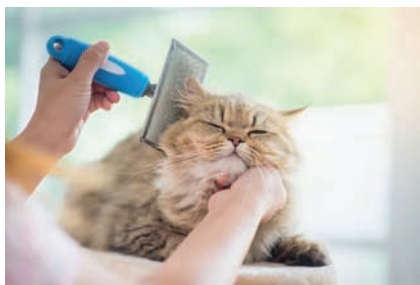


Bathing and grooming

Regular bathing and grooming are essential for maintaining good skin and coat health and condition as well as cleanliness, although different breeds or types of dog and cat vary in the levels of care they need. In long-haired cats and dogs the coat can become matted over a relatively short period of time, which can result in tightening of the skin, discomfort and pain. Short-haired dogs require grooming about once a week and bathing about every six weeks^[70], while short-haired cats require only occasional grooming and some may never need bathing. Other dogs can be groomed as required, with some long/curly-haired breeds requiring daily grooming. Dogs with long hair may need to be trimmed or clipped and bathed every four to six weeks. Pet care specialists and veterinarians can offer advice about how to carry out bathing and grooming, and can supply the details of a reputable grooming service.

In most countries the grooming industry is unregulated so choose carefully. Here are a list of tips to guide selection of a good establishment:

- Look around the premises and assess the condition of the equipment and practice
- Look for premises that are secure
- Select a groomer that feels likely to act responsibly and respond appropriately to the pet's behaviour in a positive way
- Find out whether it is a requirement that all dogs visiting the establishment have up to date vaccinations – if not look elsewhere
- Ask to see qualifications and whether they are members of a professional body if one exists
- If in doubt, look elsewhere.





Pet identification

It is important that cats and dogs carry some form of identification so that their ownership can be established should they stray from home or become lost. A collar with an engraved tag showing a telephone number is one of the most well-known forms of this, although these can be easily removed or lost.

Microchipping is increasingly common and is a more permanent form of identification. It is a simple, safe, quick and relatively pain free procedure carried out by a veterinarian in which a microchip is inserted just under the skin, usually at the base of the neck. This is then registered on a database which contains the owner's contact details. If a pet goes missing the owner can notify the microchip database and alerts can be issued to local veterinarians and other relevant animal authorities.

Routine scanning of stray dogs is also becoming commonplace, increasing the chances of lost pets being reunited with their owners. In order to be effective the system relies on up to date contact information and it is critical that an owner ensures database details are updated if moving house or if ownership changes. Microchips are not able to pinpoint where a dog or cat actually is. However in some countries there are increasing numbers of pet-portable devices on the market that use global positioning systems (GPS) to give owners live updates of their pets' whereabouts.

Needs of cats kept exclusively indoors

As the world urbanises, there has been a significant increase in the numbers of cats kept exclusively indoors. Cats can spend on average between 16 and 20 hours a day sleeping. As long as they have appropriate access to food, water, places to sleep and hide and a litter tray they should be able to live indoors quite happily^[71]. By providing an enriched environment with plenty of opportunities for physical activity, mental stimulation, and the expression of natural behaviours, indoor cats can enjoy very similar opportunities for exploration, play and predatory behaviour to those experienced by their outdoor cousins^[72].

Part of the cat's normal behavioural repertoire is to climb and jump, and they enjoy being above ground level where they feel safer and can more easily observe their environment. Vertical surfaces for climbing (cat trees and climbing poles), elevated platforms for sitting and observing the area, for sleeping and resting, places to hide, and scratching surfaces can all help to create an enriched environment. Improvements in feeding methods that promote some of the predatory sequence of behaviours, such as feeding puzzles, are a great way to stimulate these natural instincts^[72]. Visual, olfactory, auditory, and pheromonal enrichment^[72] methods that stimulate cats' natural behaviour^[73] can also support physical health and emotional well-being. Veterinarians can advise on appropriate forms of environmental enrichment to enhance the lives of indoor as well as outdoor cats.



Cosmetic surgery (medically unnecessary procedures)

The term cosmetic surgery is usually reserved for procedures which are not considered essential for medical reasons, and are conducted in order to alter appearance or modify behaviour. Tail docking and ear cropping procedures in dogs involve surgical removal of part or all of the tail or ear respectively, and are usually conducted for aesthetic reasons. Note that tail docking occurs at just a few days of age, so in sourcing pets, it is advisable to research breeders that do not practice this. Procedures like these, unless medically indicated, are unnecessary and should be avoided as they may increase the risk of surgical complications while offering no medical benefit. In many countries these procedures are illegal.

Other procedures in this category include declawing of cats and removal of vocal cords in dogs that bark excessively. Neither intervention should be necessary if the animal has been properly trained and socialised, or provided with outlets for instinctive behaviour. For instance, scratching is a normal behaviour in cats.

The declawing procedure, which involves surgical removal of both the claw and terminal joint of the cat's toes, helps prevent scratching of people, reduces damage to household possessions but also stops a cat from expressing natural behaviour. In many countries around the world the declawing procedure is illegal.

Education of pet owners about appropriate behavioural and environmental modifications can provide more humane solutions to these problems. For instance, scratching behaviour can be directed to cardboard scratchers or scratching posts. Equally, behavioural modification and positive training can help tackle excessive barking.





Pain management

Most people would recognise that the welfare of an animal in pain is poor. Changes in behaviour, including loss of appetite, reduced activity/mobility levels, postural changes and reduced grooming may reflect the presence of pain^[74]. Regular, meaningful interactions and a strong bond will enable early detection of a painful condition^[75]. Degenerative joint disease is an example of a prevalent disease that is associated with chronic pain. Healthy weight management can help to reduce the risk of painful conditions such as joint disease developing. If a pet is suspected of being in pain the owner should consult their veterinarian who can make an assessment and provide them with appropriate pain treatment. Additionally, a veterinarian may prescribe pain medications after routine procedures such as sterilisation or dental treatment.



Safe car travel for pets

With careful planning and the right safety equipment, taking a pet on a car journey can be fun. Securing a pet whilst travelling in the car is necessary to prevent the driver from getting distracted. It will also help keep everyone safe in the event of an accident, or if the driver has to brake suddenly. For dogs there are a number of options, including the use of a crate or guard rail that limits them to the rear of the car, or a harness that can be combined with a seatbelt adaptor. For cats, a carrier that's purpose-designed for them, is roomy and well-ventilated, and secured in the vehicle in a spot that is not in direct sunlight works well. When parked, getting a dog out of the car on the pavement side can reduce the risk of an accident. Some dogs love to stick their heads out of a moving car window. However letting them do this is not advisable as it risks injury from a passing object, and the wind can cause eye and ear problems. If going on a journey of any length, regular toilet breaks and leg stretches are beneficial. It is not advisable, however, to remove a cat from its carrier until at the destination and in a safe and confined place.

Dogs are particularly sensitive to heat and even on a mildly warm day can rapidly overheat in a car, even with windows open and the car in the shade. Leaving a dog unsupervised in a car or on the bed of a truck for any length of time, even under these conditions, can be fatal and should be avoided.



Contact your veterinarian to determine if health certificates or other regulatory requirements are needed for longer distance travel outside of your state or country.

Five top tips for safe car travel on hot days:

1. Careful consideration should be given to whether it is absolutely necessary for the pet to travel
2. Take a supply of cool water
3. Provide access to shade and space to move around freely, away from direct sunlight
4. Plan multiple stops along the journey to provide the opportunity for leg stretching, a rest and a drink
5. Watch out for early signs of overheating including panting, disorientation and excessive thirst. If concerned, move the pet to a cool area and try to cool them down with cold water and cold wet towels. Consult with a veterinarian immediately.





Pets in society

Responsible pet ownership brings benefits not just for pets and their owners, but also for society as a whole. These benefits are multi-faceted and involve aspects of health, economics and social interaction. Conversely, irresponsible pet ownership incurs significant social cost. Cleaning up dog waste, dealing with unwanted animals and uncontrollable or aggressive dogs are common gripes which lead to negative stereotyping of pets and their owners. Ultimately irresponsible ownership can result in legislation for increased control over pets and pet friendly spaces, making it harder for responsible owners to integrate with their communities.

Health benefits

There is a substantial body of scientific evidence showing that responsible ownership of pets can improve the health of people of all ages. These benefits can be summarised as^[76]:

Increased physical activity	Dog walking can make an important contribution to achieving the recommended amount of weekly physical activity to sustain good health with the potential to lower risk of cardiovascular disease, hypertension, stroke, type 2 diabetes, certain types of cancer and depression ^[77]
Increased social support	The presence of pets is associated with reductions in chronic levels of physiological stress, and reductions in the stress response to mild to moderate stressors ^[76]
Reported health benefits for children	Children who grow up in a home that has a pet have fewer allergies with fewer infections and episodes of gastroenteritis

The mechanisms by which pet ownership may confer benefits to health are not well understood. One theory is that pets provide support that acts as a buffer against life's stressful events which in turn has a positive effect on health outcomes. However some studies show little or no effect. Increasingly researchers are also looking at how responsible ownership also benefits the health of animals.



Social capital

Social capital is the 'glue' that holds our communities and society together^[77]. Responsible pet ownership, especially through dog walking, has been shown to act as a catalyst for strengthening social connections^[78]. Pets have been described as 'social lubricants' and as facilitators of social interactions and a sense of community.

Many dog owners will attest to what has been demonstrated by studies of social contact: that positive social interactions with others (including strangers) are more likely to occur when they are out walking their dog^[79]. Responsible pet ownership is thought to contribute to community cohesion through a variety of mechanisms, including facilitating social interactions and the formation of friendships, providing social support and a visible community presence enhancing feelings of safety^[78]. The opportunities for social interaction that dog ownership provides are particularly important for older people who may have diminishing social networks.

Animal Assisted Intervention (AAI)

Animals have been included in therapeutic settings informally since at least the 18th century but recently they have become more widespread in a variety of settings^[80,81].

AAI has been used therapeutically in patients of all ages^[81]. In hospitalised children (5 to 18 years)^[82] and adults with advanced heart failure^[83], a single therapy dog visit was found to reduce

pain levels and blood pressures/anxiety levels respectively. AAI also brings benefits for older people in residential care settings^[81]. Visits by therapy dogs to nursing homes increase prosocial behaviours and decrease loneliness^[84]. Dog walking is receiving growing attention as an alternative form of AAI and may be particularly critical in older people^[85]. Dog walking in this group is associated with weight loss and increased walking distances^[76].

Interactions with animals have important implications for child development (both typically developing and autistic), especially in the areas of social growth and communication^[66,76,86]. In the classroom, animals help to focus students' attention on specific learning objectives^[87] and help to create a friendlier and less threatening environment^[87]. For students with pervasive developmental delays or autism, animals may serve as vehicles for language development, as well as improving decision making, problem-solving skills, and social interactions with adults and peers^[81].

Despite these studies demonstrating the potential benefits of including animals in therapeutic settings, research on AAI's is at an early stage, although recently has received significantly greater support. The public-private partnership established between the WALTHAM Centre for Pet Nutrition and the US National Institutes of Health is one example of how high quality research in this field is advancing with greater credibility and multidisciplinary reach^[88].



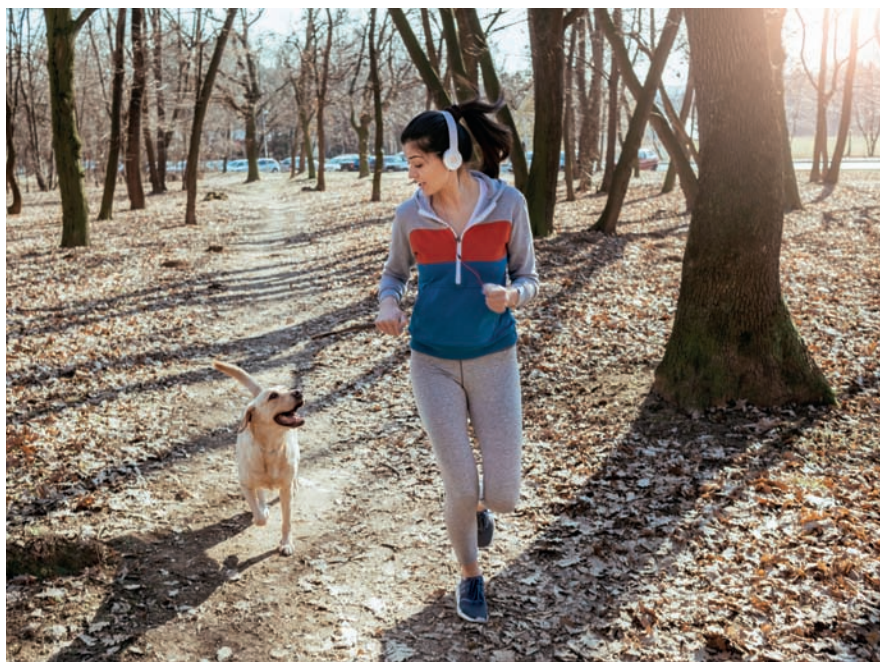
Economic impact of pets

Given the large numbers of cats and dogs living in our homes worldwide and in individual countries (Europe: 81M dogs, 99M cats^[89]; US: 70M dogs, 74M cats^[90]) it is important to consider the economic impact of pet ownership on national and international economics and this is an active area of current research^[91].

The association of pet-ownership with physical and mental health benefits, suggests the likelihood of significant cost savings for health care systems. Two studies carried out in the late 90s, one in Australia and the other in Germany, made

preliminary estimates of health care system savings of \$3.86 billion and €5.59 billion respectively^[92,93] as a consequence of pet ownership. A more up to date analysis performed in the UK estimates annual savings to the National Health Service of almost £2.5 billion^[91].

The European Pet Food Industry Federation (FEDIAF) estimates that throughout Europe 780,000 direct and indirect jobs are generated by pet ownership and the pet food industry and related supply and services represent a combined annual turnover of over €30 billion.





Pets in the workplace

Many dog owners would like to take their dog to work rather than leave them at home alone. Fortunately there is a growing number of companies that enable employees to take their pets into the workplace. A pet friendly workplace can help to reduce employee stress levels and create a more socially interactive environment^[94]. So it is reasonable to suggest that bringing pets (particularly dogs) into the workplace could increase employee productivity and job satisfaction as well as decrease absenteeism.

The welfare of pets and people in the workplace is of paramount importance. In the ideal setting, there should be suitable areas provided for exercise, for preparing animal meals, and quiet areas for resting and sleeping.

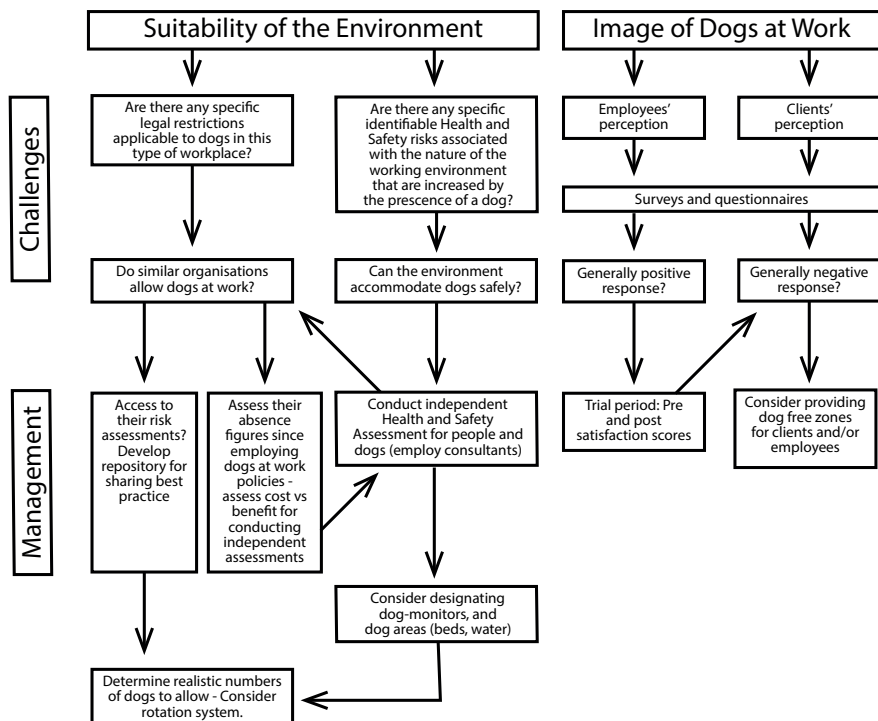
Pets in the office – Practical considerations for introducing pets into the workplace:

- Obtain support from senior management, colleagues and landlords. Establish a clear written policy and rules, including behaviour assessments and vaccine/parasite control guidelines for both pet and workforce safety
- Make sure appropriate insurance is in place and legal checks have been carried out
- Ensure adequate facilities and cleaning and other materials are available
- Plan an appropriate launch programme and internal communication.

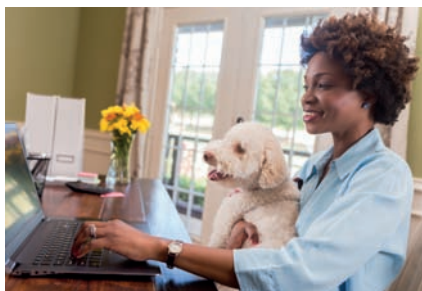




Figure 5. An illustration of stages involved in developing take your dog to work policies (adapted from Hall et al., 2017).



Most workplaces do not have a policy to support bringing a dog to work even where this is existing practice. Clear, effective workplace policies, and the creation of an environment that embraces the needs and safety of both people and pets, may enable people to benefit from interacting with pets during their working day and not just at home^[95].





Pet ownership in the future

Over the last couple of decades the nature of pet ownership in many countries has evolved significantly. Communities are becoming increasingly urbanised, with growing numbers of people living in flats and apartments and rented accommodation. In addition, families are more fragmented and geographically dispersed. Furthermore, human populations in much of the developed world are ageing dramatically. All of these factors are likely to continue to change the nature of the role of companion animals in society, and perceptions of what constitutes successful pet ownership. Pets are increasingly integrated into the home environment and seen as members of the family. At the same time, they are increasingly the subject of policy discussions and restrictions on their presence in public spaces^[96].

Advances in nutrition, medical treatment and understanding of animal behaviour have helped improve pet health and welfare. A re-evaluation of their position within the home and greater understanding of the economic and health benefits they bring makes us more aware than ever of their contribution to individuals and society. The changing nature of the human-companion animal relationship will continue to bring new challenges to pet owners in the future. The more we can understand about this special relationship, and the mutual bond between pets and people, as well as the specialised health and welfare needs of cats and dogs, the better equipped we will be to meet pet ownership challenges in the future.







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James Serpell is the Marie A. Moore Professor of Humane Ethics and Animal Welfare at the School of Veterinary Medicine, University of Pennsylvania, where he also directs the Center for the Interaction of Animals & Society (CIAS).

He received his bachelor's degree in zoology from University College London in 1974, and his PhD in animal behaviour from the University of Liverpool in 1980. In 1985 he established the Companion Animal Research Group at the University of Cambridge before moving in 1993 to his current position at the University of Pennsylvania where he lectures on veterinary ethics, applied animal behaviour and welfare, and human-animal interactions.

His research focuses on the behaviour and welfare of dogs and cats, the development of human attitudes to animals, and the history and impact of human-animal relationships. In addition to publishing more than 170 articles and book chapters on these and related topics, he is the author, editor or co-editor of several books including *Animals & Human Society: Changing Perspectives* (1994), *The Domestic Dog: Its Evolution, Behavior & Interactions with People* (1995, 2017), *In the Company of Animals* (1996), and *Companion Animals & Us* (2000).



Sandra McCune is Scientific Leader for Human-Animal Interaction (HAI) at Mars Petcare.

She qualified as a registered veterinary nurse before completing a degree in zoology from Trinity College, Dublin. She has a PhD in cat behaviour and welfare from the University of Cambridge and is now based at the WALTHAM Centre for Pet Nutrition in Leicestershire.

She has studied a range of topics including aspects of temperament, social behaviour, feeding behaviour, cognition, age-related changes in behaviour and HAI. She has collaborated with HAI researchers from the USA, UK, Austria, Germany, Australia and Brazil. She was instrumental in the establishment of the public-private partnership between the NIH, Mars and WALTHAM which focused on child development and HAI, and continues to play a leadership role.