



Australian Government  
National Health and  
Medical Research Council

N H M R C

# NHMRC Guidelines ON THE CARE OF DOGS USED FOR SCIENTIFIC PURPOSES

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# NHMRC Guidelines

## ON THE CARE OF DOGS USED FOR SCIENTIFIC PURPOSES

To be used in conjunction with the *Australian code of practice for the care and use of animals for scientific purposes (2004)*. *Scientific Purposes* are defined as: 'All those purposes which aim to acquire, develop or demonstrate knowledge or techniques in any science, including activities for the purposes of teaching, field trials, environmental studies, research, diagnosis, product testing, and the production of biological products.'

### Introduction

These guidelines have been developed by the NHMRC's Animal Welfare Committee and supersede an earlier policy document, which focused on the use of pound-sourced dogs (*Canis familiaris*). They aim at enhancing a culture of continual improvement regarding the welfare of dogs that are used for scientific purposes in laboratories and elsewhere, including feral and wild dogs in the outside environment.

The guidelines address the social and legal issues associated with the use of dogs for scientific purposes. They also outline general principles for the husbandry of dogs, but without being comprehensive in detail. There is an extensive and accessible literature on the biology, care and housing of dogs and minimum standards have been set by some State regulators. In this regard, investigators, teachers, animal technicians and institutions are expected to act at that level of competency which will allow them to apply and extend the existing body of knowledge, share their practical experience and make innovations based on an understanding of the physical and behavioural needs of dogs.

The guidelines are intended to assist institutional Animal Ethics Committees (AECs) in considering applications for the use of dogs for scientific purposes. They also aim at assisting AECs in the development of their own terms of reference as described in section 2.2.1 of the *Australian code of practice for the care and use of animals for scientific purposes (2004)*, (the Code). This includes an AEC's provisions for approving guidelines for the care of animals that are bred, held and used for scientific purposes on behalf of the institution (Section 2.2.1 (i) of the Code) and facilitating the development of standard operating procedures that may apply to dogs (Section 2.2.17 of the Code).

### Background

The historical record demonstrates the power of comparative anatomy, physiology and pathology in providing the body of biomedical knowledge that underpins healthcare. Investigations with dogs have been instrumental in understanding the function of nerve cells and the cardiovascular system, in the discovery of general anaesthesia and insulin, in the development of techniques for vascular surgery, open-heart surgery and pacemakers and in advancing knowledge about infectious diseases. Dogs share about 65 infectious diseases with humans and research with dogs has allowed for effective management of diseases such as rabies.

Research with dogs has also distinctly benefited the health and welfare of dogs themselves and enhanced their value as companions and providers of important services to people; for example, as guide dogs for the blind, herders of livestock, detector dogs and police dogs. Research into wild and feral dogs provides knowledge for action to maintain biodiversity and protect the environment.

Companion animals such as dogs, however, have a special intrinsic value for a large proportion of the general public. Consequently, their use in biomedical and scientific research and teaching is a sensitive matter requiring sympathetic and insightful management. A notorious example of a missing pet dog ending up in a research institution occurred in the USA during the 1960s and raised a general anxiety around the world that continues to resonate. Accordingly, research institutions and investigators must be scrupulous in their acquisition of dogs to prevent similar occurrences and must demonstrate high and species-specific standards for their care of dogs.

The pattern of usage of dogs for research has changed over time and dogs must only be used when no suitable alternative can be found. Size, biological nature and the behavioural characteristics associated with sociability make dogs appropriate for a range of research questions. For example, clinical experience has thrown up a set of genetic disorders in dogs that can only be studied with dogs in order to realise benefits for both dogs and people where analogous disorders occur.

## Responsibility of investigators and teachers

(Refer to 2004 Code section 3)

There is a chain of responsibility for the health and well-being of dogs used for experimental purposes but paramount responsibility lies with investigators and teachers.

Investigators and teachers must ensure that they and their staff are competent to handle dogs and provide a high standard of care and that their staff have an informed acceptance of the proposed treatment and euthanasia of dogs according to ethical practice. Investigators and teachers are advised to consult specialists (e.g. veterinarians, dog behaviour experts or those skilled in handling dogs in particular experimental circumstances) whenever necessary.

Investigators and teachers are responsible for ensuring that projects have been approved by the institutional AEC and comply both with the *Australian Code of Practice for the Care and Use of Animals for Scientific Purposes* and relevant legislation before commencing the project. The use of dogs must be justified and the principles of replacement, reduction and refinement must be applied.

## Responsibilities of institutions

(Refer to 2004 Code section 2.1.1)

Institutions have an essential responsibility for the welfare of dogs used for scientific purposes. Accordingly, institutions in which dogs are used are required to develop written guidelines for the acquisition and care of dogs. These guidelines are to be developed in conjunction with research, teaching and animal care staff, and be approved by the institutional AEC. Specific requirements regarding, for example, cage and pen sizes and transport, should be indicated in these guidelines and should be consistent with the requirements of State and local governments.

The chain of responsibility for animals must be clearly defined in written guidelines. The ultimate responsibility for dogs in research and teaching lies with the investigators and teachers leading a given program. However, institutions are obliged to foster the conditions, competencies and culture that allow the proper execution of this responsibility. For example, the employment of well-trained, caring and motivated staff is critically important for the welfare of dogs. Professionalism is required for the proper application of the principles of replacement, reduction and refinement when programs are in the design stage.

Teaching institutions that use dogs such as veterinary schools must have processes in place to ensure that students make informed decisions about their use of dogs in learning and are introduced to the concepts and practices of ethical decision-making as part of their total professional education. There must be guidelines in place as per 6.1.4 of the Code to respond to any concerns that are raised.

## Selection and acquisition of dogs

*(Refer to 2004 Code section 4.3)*

The nature of the project in mind will determine whether the dogs involved will be purpose-bred or not. Most dogs used for research and teaching in Australia are purpose-bred but some pound-sourced dogs are still used and are suitable for some research or teaching objectives. Dogs sourced from pounds will not be suitable where a reliable breeding and development history is required. Pound-sourced dogs may not be accustomed to captivity and confinement and may mount adaptive responses that compromise research findings.

In this connection, the use of the term 'pound' and 'shelter' appears to be inconsistent around Australia. The term pound generally refers to establishments maintained by local authorities where stray and unwanted animals are held until disposed of by re-sale, re-homing or euthanasia. Some local authorities, however, have chosen to use the term 'shelter'; a term usually restricted to establishments run by community-based organisations which take in and look after lost or unwanted animals, mainly companion animals.

Basically, a pound is run for legal purposes to hold stray dogs for a statutory time period. Some shelters also undertake pound activities and seek to rehouse suitable animals from the owned animals that have come into their care and from stray animals after a statutory holding period has elapsed.

### Temperament and suitability of breed and type

The type and breed of dog required for use will vary according to the scientific purpose involved in a project. Genetic and biologic factors including characteristics as basic as size, shape will be important determinants and will favour the use of purpose-bred dogs. Behavioural factors such as the poor socialisation and an accompanying fear, anxiety and aggressiveness may militate against the selection of pound-sourced dogs.

Some broad statements can be made about the temperament and behaviour of types and breeds of dogs. For instance, breeds and types known to require considerable exercise and activity would not be suitable for confinement in a laboratory environment, where they may become restless and bored. Breeds and types recognised as being flighty or excitable may also be unsuitable for long-term experimental conditions. On the other hand, the extremes of behaviour observed in particular breeds of dog may be the object of investigation. The characteristics of different dog breeds outlined in the references under the heading of further reading should be regarded as generalisations. In this regard, some strains of dog breeds with a reputation for being bite-inhibited are known to be aggressive.

Dogs expressing behaviours associated with human or dog-directed aggression are unsuitable unless these behaviours themselves are the object of investigation. Dog bites and other injuries are an occupational health and safety hazard, which can be severe. If risks from aggressive behaviour are not controlled, significant injury may result to individuals and competent staff may be deterred from working with dogs.

Greater detail about temperament testing of dogs can be found in the first instance in references listed under Further Reading.

## Health Status

Many impounded dogs will be unsuitable for scientific purposes because of poor health, behaviour problems, an unknown disease history and the possible carriage of zoonotic agents. Accordingly, dogs from pounds will require competent clinical examination, including an assessment of behaviour, and appropriate treatment before being allowed entry to an Institutional supply unit.

## Social issues and ethics

The ethics of all proposed research or teaching must be considered by the relevant AECs, and may only proceed if ethics approval has been received. AECs and researchers are advised that some views are strongly held in relation to research with dogs, and particularly pound-sourced dogs.

Australia's National Consultative Committee on Animal Welfare (NCCAW), which advises the Federal Government on the national implications of welfare issues affecting animals, prepared a position statement on the use of pound-sourced animals for scientific purposes in 1993. This position statement summarised the opinion of NCCAW as to the issues. The statement was retained un-amended in 2008 (see <http://www.daff.gov.au/animal-plant-health/welfare/nccaw/guidelines/research/pound>). Extracts from it are reproduced in Box 1. They illustrate the range of perceived community concerns and attitudes about pound-sourced animals that are real feature of the social climate in which research and teaching occurs.

### Box 1 National Consultative Committee on Animal Welfare (NCCAW) Position Statement – pound-sourced animals

The use of dogs and cats from pounds for scientific research is one of the most controversial issues in the debate over animal experimentation. The views for and against their use are both set out below.

#### Animal Welfare Groups

Animal welfare groups oppose the use of pound-sourced domestic animals in research. Their opposition is based on a number of grounds including:

- The use of animals from pounds or shelter for research further obscures the huge community problem of overbreeding and irresponsible treatment of companion animals.
- Pounds and shelters should operate for the benefit of discarded or lost pets. If the use of pound animals for research continues the community may be discouraged from bringing animals to the pounds or shelters where it is perceived that they may suffer further if transferred for research.
- Animals which are accustomed to a domestic family situation may suffer simply through the confinement and possible social isolation of a laboratory environment.
- The continued use of 'cheap' pound-sourced animals contradicts the expressed purpose of government to reduce the number of animals used in research.

#### Scientific View

The scientific community supports the use of pound-sourced animals on the following grounds:

- Research using pound-sourced animals have lead to many advances in medicine and surgery.
- It is wasteful to destroy tens of thousands of dogs and cats in pounds each year; and then breed additional animals for research. It is better to use pound animals for the benefit of society in medical research than simply to destroy them.

Each AEC should be able to consider competing ethical stances and social and contextual issues in reaching their decision.



## Legal issues relating to pound-sourced dogs

Legislation relating to the ownership and statutory holding periods for pound dogs varies among Australia's States and Territories. It is essential that institutions know and observe local government and State laws relating to the holding and use of pound dogs in biomedical research.

Legislation covers the following matters:

1. The capacity of pounds/shelters to supply dogs for research. Legislation exists in some States that bans this supply.
2. Codes of Practice/Guidelines covering requirements for supply if this is allowed. There can be a requirement for pound animals used in research to be held for a further seven days, over and above the period required in the pound itself, before the animals can be used for research. This provides greater opportunity for retrieval than for normal pound animals, which are destroyed after the statutory holding period if they are unclaimed. Institutions must maintain full records of every dog obtained from a pound and these records must include the identification number given to the animal by the pound.
3. Ownership status i.e. the transference of ownership of the animal to the pound if the dog is unclaimed after the statutory holding period. In most States and Territories, dogs must be held for a statutory period and if unclaimed at the end of this time, ownership of the dog transfers to the pound. The pound then determines the fate of the dog as the owner.

## NHMRC recommendations regarding pound-sourced dogs

In view of these legal and ethical considerations, the NHMRC recommends, for scientific purposes (both research and teaching) where there is no suitable alternative on scientific grounds to the use of the dog that:

1. Where legislation permits, pound-sourced dogs with evidence of ownership may only be used in biomedical research and teaching where written permission is obtained from the owner.
2. Where legislation permits, pound-sourced dogs that are stray or otherwise without evidence of ownership, and which have fulfilled the legislative holding requirements, may be made available for non-recovery experiments conducted under full surgical anaesthesia. It is recommended that pound-sourced dogs only be used if ownership transfers to the pound after the statutory holding period.
3. Cadavers of dogs euthanased at pounds can and should be made available for research and teaching. In this instance, pounds have become the owners of dogs and the extra statutory holding period that operates in some cases does not apply.

## Guidelines for the acquisition of pound-sourced dogs

1. Be aware of the legislative requirements that apply to pound-sourced dogs within the jurisdiction that applies.
2. Dogs must have been thoroughly checked for identification, including scanning for microchips, at entry to the pound. If dogs can be identified, owners must be notified at once.
3. Dogs must have completed their statutory holding time, been thoroughly checked for identification and be clearly owned by the pound.

4. Dogs that are unclaimed and unsuitable for re-housing at the end of the statutory holding time should be assessed by a veterinarian or person experienced in the selection of dogs and cats for experimental purposes. The assessment should include:
  - (a) Health, general condition and disease status
  - (b) Behaviour – captivity can impose stress and extended times in captivity can lead to distress
  - (c) Suitability for research purpose. There is little point in transferring unsuitable animals to the institution and exposing them to the risks of transportation.
5. Dogs are to be transported according to accepted standards for the humane transportation of research animals.
6. Unless conducted beforehand, each dog should receive a comprehensive clinical examination by a veterinarian experienced in small animal medicine on entry to the institution and receive any appropriate treatment.
7. Dogs must be held within an institution for seven more days before use and in an area where they can be returned to the owner if reclaimed. Extended periods of holding can cause significant behavioural problems in dogs unused to confinement. Isolation should be avoided if possible and holding conditions that apply in other areas should be duplicated in quarantine.
8. The institution must maintain comprehensive records of every dog obtained from the pound, including full description and the results of clinical examination and subsequent history. Records must contain the identification number given to the dog by the pound. After issue by the institution, the continuing maintenance of adequate records becomes the responsibility of investigators or teachers after they receive dogs into their care.
9. Dogs used in non-recovery experiments must be under full surgical anaesthesia.
10. Appropriate AEC approval for all research must be obtained.

## Guidelines for the use of owned dogs for scientific purposes

There is increasing use of owned dogs for observational and non-invasive behavioural studies, particularly investigations of the human-animal bond. These studies must have the appropriate AEC approval and owner consent.

## Care of dogs used for scientific purposes

*(Refer to 2004 Code sections 4.4.14, 4.4.15, 4.4.16, 4.4.17 and 4.4.18)*

### Breeding

Genetic disease and inbreeding depression are hazards for the breeding of all animals and require monitoring in dog breeding colonies.

Greater detail about the genetic considerations applying to dogs can be found in the first instance in references listed under further reading.

### Feeding

*(Refer to 2004 Code sections 4.4.24, 4.4.25, 4.4.26 and 4.4.27)*

Dogs should be given a palatable diet adequate in amount and composition for a given life stage (pregnancy, lactation, growth etc.) and in line with accepted nutritional standards. If standard diets are not suitable for a particular research program, special dietary arrangements should be made, and approved by the institutional AEC.



Dogs should be weighed on admission to the institution and weighed weekly thereafter. Increases and decreases in weight are important indicators of a dog's response to new environments and research protocols. Weight records are an informative component of the health records of dogs required by AECs and can be a convenient starting point for these records. The weighing of dogs provides an additional opportunity for social contact with people and other dogs and the maintenance of their mental wellbeing.

Cool potable water must always be available.

Greater detail on the feeding of dogs is found in the first instance in references listed under Further Reading.

## Housing

*(Refer to 2004 Code section 4.4)*

Dogs should be housed a clean, dry environment, within contact or sight of other dogs. Lighting, temperature and humidity should all be appropriate for the comfort of dogs as described. Disturbing noise that may be within a dog's auditory range should be reduced. If water is used to hose down enclosed areas, residual water should be removed in order to manage humidity.

Areas for holding dogs should not be next to areas holding other species, which might be alarmed by the sight or sound of dogs.

Indoor housing should provide:

- clean water
- a comfortable place to lie down
  - appropriate dry bedding should be provided
  - trampoline beds are recommended in order to prevent calluses and decubital abscesses
  - impervious wooden bunks or benches are also acceptable as long as they are easy to keep clean and dry and do not result in any appreciable rubbing on the animals' coats
- room to defecate away from the sleeping area, with faeces removed at least daily
- opportunity to see and smell other dogs, with the exception that females in oestrus should be housed away from males
- an appropriate environment which protects the animal from excessive and unpleasant noise that may be outside the human audible range
- toys which can be safely chewed or which may contain food treats intermittently, when this is demonstrated as environmental enrichment for particular dogs.

Cages should be cleaned at least once a day. Special attention should be paid to, and special facilities should be provided for, sick dogs, breeding animals and dogs less than 16 weeks of age. For instance, whelping boxes lined with shredded paper or other suitable material should be made available to these animals.

Outside housing should provide:

- at least meet local government or State regulations for dog pounds or shelters
- provide a dry sleeping area
- provide shade and shelter from wind and rain and account for prevailing weather conditions;
- be well drained
- faeces removed at least daily.

Greater detail on housing and the ideal parameters of the physical environment for dogs can be found in the first instance in references listed under Further Reading. Good housing for dogs also

requires design and engineering that allows for easy and efficient operation by animal care staff, efficient and hygienic workflows from 'clean' to 'dirty', efficient use of water and energy and measures to abate noise from barking dogs.

Long-term planning must consider that animal facilities require regular refurbishment or replacement to take account of evolving standards as knowledge and experience accumulates. New dog facilities should be informed by the good features of the best existing facilities and should attempt to rectify the defects of the best existing facilities.

## **Mental wellbeing**

Specific details on the maintenance of mental wellbeing in dogs can be found in the first instance in references listed under Further Reading.

### ***Social environment***

Dogs are gregarious, social animals and contact with people and other dogs is crucial for their mental well-being and, ultimately, their physical wellbeing. This applies especially to animals used for research where adaptive responses to behavioural stressors may do detriment to observations. It is known that dogs used for medical research are generally better adapted to their holding conditions if they receive frequent and regular contact with people.

Planning must allow for at least 20-30 minutes of daily contact between dogs and at least one attendant, even when dogs are group housed. Contact as result of feeding, cleaning and routine husbandry is important but should be regarded additional to this planned contact. Some dogs will demand more attention than others and some dogs may require less than 20 minutes contact. The length of time spent with each animal will depend on individual needs.

Dogs held at institutions for more than seven days should also have regular contact with members of research teams to allow for habituation learning, unless such contact is contraindicated by the research protocol. If members of research teams become friendly sources of contact, dogs will be less anxious in experimental situations. The need for contact is crucial for young dogs where social development is incomplete and for all dogs entering an institution where it will act to reduce distress arising from anxiety and fear.

### ***Change of environment and time out of cages***

Dogs held in cages need variation in their environment and an opportunity to explore new surroundings and to use all their senses. Dogs confined in a restricted and unchanging environment may exhibit behavioural abnormalities such as self-mutilation and repetitive behaviours (stereotyped behaviours), which include continual jumping in cages.

Daily outdoor exercise must be planned for and delivered. Animals should spend several hours in an outside run in contact with or sight of other dogs. Where an outside run is not available or is contrary to a research protocol, attendants need to provide an opportunity for dogs to leave their normal cage for at least 30 minutes each day. During this period they should be taken outside to run freely or should be taken for a walk on a leash, even in bad weather. Dogs enjoy being outside and experiencing a change of environment. The time dogs spend outside of their cages while these are cleaned is valuable but not sufficient. It is recognised that these requirements will not be possible where biosecurity has to operate and public health has precedence. In this case, possible offsets must be sought and activated.

### ***Environmental enrichment***

Environmental enrichment refers to factors in an animal's environment that are mentally stimulating and enhance an animal's quality of life. Social contact is the predominant form of environmental enrichment for dogs. Other forms of environmental enrichment include novel objects ('toys') that may elicit activity to manipulate them and the hiding of food to encourage foraging behaviour.

There is evidence to support the benefit of these forms of environmental enrichment. Any form of enrichment, however, has been applied critically and monitored to ensure that it actually operates in the circumstances in which it is used.

Details on environmental enrichment for dogs can be found in the first instance in references listed under Further Reading.

## Transportation

The transportation of dogs must meet or exceed standards set out in references listed under further reading. Professional dog transporters operate according to industry codes of practice and are recommended for their practical experience.

## Health Care

(Refer to 2004 Code sections 4.5.8, 4.5.9, 4.5.10 and 4.6.1)

Health records are required for dogs held in breeding and holding facilities. Records of weekly weighing provide a useful starting point for these records.

All dogs used for scientific purposes should be clinically examined by a veterinarian at a frequency and with reporting requirements determined by the institutional AEC and according to assessed need. Reliable clinical examinations require assessment of health records. Additional health surveillance and care should be directed to those animals that require it because of exposure to hazards as part of project design.

The health program for dogs not undergoing acute surgery, experimentation or use in a teaching practical and kept for longer than 7 to 10 days should include any required vaccinations, appropriate management of internal and external parasites and regular bathing and grooming where this may be required for a given breed or type of dog.

## Anaesthesia and Analgesia

The need for adequate competencies is a principle for humane animal experimentation that precedes the three Rs of replacement, reduction and refinement. For this reason, investigators and teachers involved with projects that entail surgery or other possible hazards for pain and distress are expected to have appropriate competencies. Specific details on anaesthesia and analgesia in dogs can be found in the first instance in references listed under Further Reading, particularly the *NHMRC Guidelines to promote the wellbeing of animals used for scientific purposes (2008)*.

## Mortalities

(Refer to 2004 Code section 4.5.4)

All deaths in dogs other than planned euthanasia at the end of the protocol must be the subject of a competent post mortem examination to a standard acceptable for the advancement of knowledge and with support from additional laboratory tests where required. The AEC must be notified of the death and, if practicable, before the post mortem examination. Efforts should be made to benefit from the presence of investigators or teachers at post mortems.

If the death of an animal is unexpected and has resulted from experimental methods or mismanagement, the investigator or teacher and animal care staff must take immediate action to prevent further deaths from the same cause.

A report of the likely immediate and predisposing causes of death and any remedial action taken by the investigator should be forwarded to the AEC promptly.

## Euthanasia and disposal

(Refer to 2004 Code sections 3.3.18-3.3.23 and 4.8.1)

When euthanasia is required it should be induced quickly and painlessly; for example, with an intravenous overdose of barbiturate. Dog carcasses should be disposed of on-site in a sanitary and environmentally acceptable manner. Where this is not possible, a competent waste management operator should dispose of carcasses in a similarly appropriate manner.

Inappropriate respect for dogs, the management of their death and the manner of their disposal can lead to considerable distress in those involved in an institution and should be avoided strenuously. Dog handlers, veterinary students and researchers should be prepared for the emotional difficulties that may result from their use of the dogs. Access to trained counsellors or mentors should be made available (but optional) before, during and after the euthanasia event.

The adoption and rehoming of dogs used for scientific purposes is not endorsed as general good practice because the risk of irresponsible animal ownership may create new animal welfare problems. Accordingly, appropriate policies and protocols must be developed for the adoption of dogs where this is regarded as a disposal option by institutions using dogs for research. Key issues for the adoption of dogs are the nature and temperament of dogs and the circumstances, competency and motivation of those seeking adoption. Dog bites and other injuries are a public health hazard and the risk is heightened when strong and potentially aggressive dogs are combined with inexperienced handlers.

## Further reading

### Codes and guidelines

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