

## Animal Research Review Panel Guideline 4

# Use of animals undergoing surgical procedures for educational purposes

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Revised: August 2020

The aim of this guideline is to assist Animal Ethics Committees (AECs) and teachers considering the use of animals undergoing surgical procedures for educational purposes.

The guideline does not address the training of veterinarians in a clinical situation where procedures are performed for the welfare of animals, which is not subject to the *Animal Research Act 1985*.

### 1. Educational value

1.1 Applications to the AEC must include:

- A clear explanation of the educational value of the teaching project.

1.2 Teaching projects for which there is likely to be sufficient educational value may include:

- Areas where new skills or knowledge are being developed. For example the development of new surgical procedures or the demonstration of new surgical procedures for which there is not existing expertise.
- The demonstration of techniques to practitioners who would not normally have the opportunity to work with specialists in the procedures being demonstrated.

1.3 Projects for which the educational value should be carefully evaluated include:

- The demonstration of techniques that could be taught in a clinical setting.
- Surgical workshops where the demonstrator of techniques is not a surgeon (medical or veterinary).

1.4 Projects for which the educational value would not be acceptable include surgical workshops held for purely promotional or commercial reasons.

1.5 For larger establishments which may be approached by outside groups to conduct surgical workshops, a practical means of assessing the educational value of the workshop would be to obtain the assessment of a senior clinician (or senior academic) from the establishment with expertise in the area.

## **2. Alternatives to animals**

2.1 Applications to the AEC must include

- Clear justification for the need to use animals.
- Reasons why alternatives to animal use are not possible.

2.2 There are sophisticated alternatives to the use of animals, which can deliver similar or improved educational outcomes. Possible alternatives include:

- Surgical simulation mannequins and equipment.
- The use of videos and computer assisted training methods.
- Dry workshops to familiarise students with the handling of instruments.
- The use of tissues from cadavers (for example from abattoirs).

## **3. Species of animals**

3.1 Applications to the AEC must include:

- An explanation of the need to use a particular species of animal.
- The relevance of species differences where the species of animal used is not that for which the technique is intended (for example demonstration on pigs of techniques to be used in humans).

## **4. Qualifications and numbers of teachers**

4.1 Applications to the AEC must include:

- The qualifications of all people involved relevant to the procedures to be undertaken.

4.2 Teachers are responsible for, and must have qualifications appropriate to, the educational aims of the procedures.

4.3 The number of teachers must be sufficient for the numbers of animals and students.

4.4 For surgical workshops teachers should be surgeons (medical or veterinary) with particular expertise in the area.

4.5 For surgical workshops company representatives may be present in order to assist with technical matters relating to equipment but must not be in control of the conduct of the workshop.

## **5. Numbers of Animals**

5.1 Applications to the AEC must include:

- The number of training sessions to be conducted.
- The number of animals to be used.
- The number of students to be trained.

5.2 The number of animals used must be the minimum to achieve the educational aims. Points to consider in assessing the number of animals include the educational objective and the number of students to be trained.

5.3 Consideration must be given to the suitability of the venue where the training is to be conducted and the number of animals and number of students that can properly be accommodated.

## **6. Animal care**

6.1 Care of animals must be in compliance with the Australian Code.

6.2 Preoperative considerations include the adequacy of facilities for animal transport and housing and the area used for induction of anaesthesia.

6.3 Preoperative handling and management must take into consideration the physiological and behavioural needs of the species (for example, times required for preoperative fasting and the avoidance of social isolation of sheep and pigs).

6.4 Choice of anaesthetic agents (including methods of induction of anaesthesia) must be appropriate for the procedure to be performed and the species.

6.5 Animals under anaesthesia must be adequately monitored in compliance with the Australian Code.

6.6 There must be at least one anaesthetist with appropriate experience in veterinary anaesthesia and substantial expertise in anaesthetising the species to be used.

6.7 There must be a sufficient number of people available and qualified to monitor anaesthetic depth.

6.7 There must be adequate equipment available to maintain and monitor anaesthesia in all animals used.

## **7. Recovery surgery**

7.1 The use of animals undergoing surgical procedures for education purposes does not usually require that animals recover from anaesthesia.

7.2 Special consideration must be given to teaching projects where it is proposed that animals will be allowed to recover. The justification for such projects must be compelling. The obligation is on the applicants to the AEC to provide strong reasons for the need to allow animals to recover to achieve the educational outcomes.

7.2 For teaching using recovery surgery the following must be described in AEC applications and assessed in detail:

- Why recovery surgery is needed.
- The degree of invasiveness of the procedure(s) and the likely impacts on the animals.
- Postoperative management including pain management.
- Facilities for recovery and postoperative housing.
- The time animals are to be held postoperatively.
- The eventual fate of animals.

7.3 Procedures and management of animals must comply with the requirements of the Australian Code (see below extracts from the Australian Code).

## 8. Conduct of students

8.1 An accredited research establishment is responsible for teaching activities which are conducted on its designated land. As with all research using animals the supervising AEC may monitor an approved project at all stages, with or without prior notification.

8.2 Teachers must ensure that the training is carried out in accordance with AEC requirements and in compliance with the Australian Code.

8.3 Students must be instructed about their responsibilities concerning animal welfare and the animal research legislation prior to the commencement of the training. Students must agree to accept these responsibilities.

8.4 The behaviour of students must demonstrate respect for the animals being used. Inappropriate behaviour must be stopped by teachers.

## 9. The Australian Code

9.1 The *Australian Code for the care and use of animals for scientific purposes* provides guidance on the use of animals for teaching, and guidance on procedures involving anaesthesia and surgery, including:

### **Responsibilities**

#### **Institutions**

4.3 *Institutions must ensure that animals are used for teaching only when their use is essential to achieve an educational outcome in science, as specified in the relevant curriculum or competency requirements, and suitable alternatives to replace the use of animals to achieve the educational outcome are not available (see Clause 1.5).*

4.4 *Institutions must identify the person with ultimate responsibility for the care and use of animals in teaching activities. This person must:*

*(i) ensure that all people involved in the care of animals understand and accept their role and responsibilities*

*(ii) ensure that procedures and resources are in place so that all people involved in the care and use of animals can meet their responsibilities*

*(iii) be competent with respect to the wellbeing of animals under their care.*

*This person does not relieve the individual responsibility of the teacher who is involved in the care and use of animals in teaching activities.*

#### **Teachers as investigators and animal carers**

4.9 *When teachers use animals for teaching activities, the teacher has the responsibilities of an investigator under Chapter 2.4.*

4.10 When teachers are responsible for the care of animals that are used for teaching activities, including during their acquisition, transport, breeding, housing and husbandry, the teacher has the responsibilities of an animal carer under Chapter 2.5.

4.11 Teachers have personal responsibility for all matters that relate to the wellbeing of animals that they use, including their housing, husbandry and care. This responsibility extends throughout the period of use approved by the AEC until provisions are made for the animal at the conclusion of their use (consistent with Clause 2.4.1).

4.12 Teachers must ensure that students have the opportunity to discuss the ethical and social issues, and legal responsibilities, involved in the care and use of animals for scientific purposes, at a level appropriate to their learning ability and comprehension, and before the use of animals commences.

4.13 Teachers must ensure that the students are supervised by a person who is competent for the procedure being performed, and that the level of supervision of students takes into account the competency and responsibilities of each student.

### **Obtaining approval from an animal ethics committee**

4.15 Teachers, and the person with ultimate responsibility for a teaching activity, must follow institutional and AEC procedures when submitting an application to an AEC (see Chapter 2.7) and provide information in the application form as outlined in Clause 2.7.4. The AEC may be a regional or central state AEC (see Clause 4.5).

4.16 AEC approval may be sought to repeat a particular teaching activity that may involve different students, times, locations or animals.

### **Anaesthesia, analgesia and sedation, and management of pain and distress**

3.3.8 The use of local and general anaesthetics, analgesics and sedatives must be considered as part of a plan to manage pain and distress, and such use should at least parallel their use in current veterinary or medical practice.

3.3.9 When anaesthetics, analgesics and sedatives are used, the choice of agent and its administration must:

(i) be appropriate for the species, age, developmental stage and physiological status of the animal

(ii) be compatible with the purpose and aims of the project or activity, and appropriate for the type of procedure.

3.3.10 Unless there is evidence to the contrary, it must be assumed that fetuses have comparable requirements for anaesthesia and analgesia as adult animals of the species. Approaches to avoid or minimise pain and distress in the fetus must be designed accordingly.

3.3.11 Regardless of their mechanism of action, the effectiveness of all anaesthetics must be monitored throughout anaesthesia.

3.3.12 When general anaesthesia is used, procedures must conform with current veterinary or medical practice and ensure that:

- (i) induction is smooth, with minimum distress to the animal
- (ii) the animal and the effectiveness of the anaesthetic are monitored to maintain an adequate plane of anaesthesia, minimise physiological disturbances, and monitor and manage potential complications (e.g. hypothermia, and cardiovascular and respiratory depression)
- (iii) when an animal is to recover from an anaesthetic, the animal is monitored and cared for to avoid and manage complications during the post-anaesthetic period (e.g. airway obstruction, hypothermia, cardiovascular and respiratory compromise, injury from uncoordinated movements or other animals)
- (iv) records are maintained of the use of anaesthetics and other drugs, monitoring of the animal, and the management of complications.

3.3.13 Animals that develop signs of pain and distress must be treated promptly, in accordance with the intervention points and humane endpoints approved by the animal ethics committee (AEC), and institutional and AEC policies and procedures (see Clauses 2.1.5 and 3.1.23–3.1.24).

3.3.14 Neuromuscular blocking agents must only be used in conjunction with adequate general anaesthesia or an appropriate surgical procedure that eliminates sensory awareness. The animal must be monitored to ensure that an adequate plane of anaesthesia is maintained or sensory awareness has been eliminated. Because the paralysis abolishes many criteria for assessing anaesthetic depth and pain perception (e.g. character of respiration, and corneal and flexor withdrawal reflexes), continuous or frequent monitoring of physiological variables (e.g. heart rate, blood pressure, pupil size, electroencephalogram), together with the effects on these of mild sensory stimuli, must be used.

3.3.15 Electroimmobilisation must not be used as an alternative to analgesia or anaesthesia.

### **Surgical procedures**

3.3.16 The wellbeing of animals that have undergone surgical procedures must be supported and safeguarded by:

- (i) conducting surgical procedures under appropriate local and/or general anaesthesia. The requirement for anaesthesia of the fetus or embryo must be taken into account before conducting surgery on a pregnant female
- (ii) using aseptic procedures if the animal is expected to recover from surgery
- (iii) ensuring that all procedures conform to accepted standards in veterinary or medical practice, as appropriate for the procedure and circumstances
- (iv) ensuring that potential complications during and after the procedure are avoided or minimised, that animals are monitored for complications, and that any complications that do occur are effectively managed. Potential complications include hypothermia, dehydration, blood loss, tissue trauma, metabolic disturbances, poor tissue perfusion and cardiovascular and/or respiratory failure, infection, delayed wound healing and impaired function

*(v) ensuring that pain management that is appropriate for the species and the procedure is effective, and includes effective anaesthesia as well as avoiding and minimising postoperative pain and distress*

*(vi) ensuring that, for non-recovery surgery, the animal remains unconscious throughout the procedure and death is confirmed at the end of the procedure*

*(vii) ensuring that animals that undergo more than one surgical procedure have recovered to good general health before any subsequent procedure is performed, unless otherwise approved by an AEC.*

### **Postprocedure care**

**3.3.17** *After any procedure:*

*(i) animals must be monitored and assessed with sufficient frequency to ensure that both predicted and unforeseen consequences are detected early (see Clauses 3.1.1 and 3.1.20-21). If an animal has undergone a surgical procedure, surgical wounds must be inspected regularly for evidence of infection and progress of healing*

*(ii) prompt action must be taken so that predicted and unforeseen consequences, including pain and distress, are addressed rapidly and effectively (see Clauses 3.1.23–3.1.24)*

*(iii) appropriate care and supportive treatment that will support and safeguard animal wellbeing must be provided, including nursing of the animal, pharmacological management of pain and distress, provision of fluid and nutritional support, and prevention or control of infection*

*(iv) appropriate records must be maintained and made accessible to all people involved in the postprocedural care of the animal (see Clauses 2.4.30–2.4.33, 2.5.11 and 3.1.22).*

**3.3.18** *If an animal must be housed in isolation or separated from a group after a procedure, the duration of such housing conditions should be minimised. The animal should be able to see, hear and smell animals of the same species unless such contact will interfere with data collection and interpretation (see Clause 3.1.12).*

**3.3.19** *If an animal is to be isolated or restrained for a prolonged period after a procedure, the animal should be conditioned to the housing or restraint conditions before the procedure is undertaken (see Clauses 3.1.11 and 3.3.3).*

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