EUTHANASIA OF NON-RODENT MAMMALS

1. PURPOSE

1.1. The purpose of this Animal Care and Use Procedure (ACUP) is to describe non-rodent mammalian euthanasia. This ACUP is approved by the Cornell Institutional Animal Care and Use Committee (IACUC). Any deviation must be approved by the IACUC prior to its application.

2. SCOPE

2.1. This document applies to all Cornell University staff and investigators who euthanize non-rodent mammals.

3. INTRODUCTION

3.1. Euthanasia of animals must be performed in a humane manner by trained personnel. This ACUP details methods of assuring humane euthanasia of non-rodent mammals. All euthanasia methods must be approved by the IACUC prior to implementation.

3.2. Contact the Cornell Center for Animal Resources and Education (CARE) at Cornell University by e-mailing care@cornell.edu for more information or for assistance.

4. MATERIAL AND EQUIPMENT

4.1. Chemical methods include the following materials:

   4.1.1. Barbiturate with needles and syringe

4.2. Physical methods include one or more of the following:

   4.2.1. Exsanguination materials (e.g., syringes, sharp blades)

   4.2.2. Penetrating captive bolt

5. PROCEDURE

   NOTE: For complete and species-specific details, refer to the AVMA Guidelines for the Euthanasia of Animals: 2013 Edition. Alternatively, contact CARE veterinary staff...
by emailing care@cornell.edu if assistance is needed to choose an appropriate method.

5.1. Chemical Method Specifics

NOTE: Verify the animal is dead before disposing of the carcass by observing lack of respiratory movement for at least 3 minutes and confirming lack of functional cardiac activity (e.g., auscultation, palpation, or direct visual observation).

5.1.1. Barbiturate Overdose

5.1.1.1. If necessary, tranquilize animals in pain or agitated prior to barbiturate overdose.

5.1.1.2. Pentobarbital sodium is the primary active ingredient in euthanasia solutions (e.g., Fatal Plus or Beuthanasia). Administer intravenously at a rate of at least 86 mg/kg or 0.22 ml/kg (1 ml/4.5 kg for 390 mg/ml pentobarbital).

5.2. Physical Method Specifics

5.2.1. Penetrating Captive Bolt

5.2.1.1. Ensure this method is performed only by a trained person with demonstrated competence.

5.2.1.1.1. Ensure proper operation by following maintenance and cleaning of the penetrating captive bolt, as described by the manufacturer.

5.2.1.1.2. Select the appropriate strength cartridge for the size and species of the animal and follow manufacturers’ recommendations.

5.2.1.1.3. The optimal site for penetration of the skull differs depending on the species. Follow suggested recommendations per species.

5.2.1.1.4. Place the penetrating captive bolt device firmly against the skull and fire the trigger mechanism.

5.2.1.1.5. To ensure death after penetrating captive bolt use, a secondary means of euthanasia (e.g., exsanguination or pithing) is recommended.

NOTE: Non-penetrating captive bolt guns generally only stun animals, and should not be used as a sole method of euthanasia. Follow this with another physical method (e.g., exsanguination or pithing) to ensure death.

5.2.2. Exsanguination

5.2.2.1. Deeply anesthetize the animal by chemical (e.g., inhalant or injectable anesthetic) methods.
5.2.2.1. If using exsanguination as a secondary method of euthanasia, animal can be rendered unconscious by physical (e.g., captive bolt) methods.

5.2.2.2. When using exsanguination as a primary method of euthanasia, verify a deep plane of anesthesia by assuring withdrawal reflex is absent by pinching the toes of non-hooved animals or pinching leg tendon of hooved animals.

5.2.2.3. Transect a major vessel or withdraw the maximum volume of blood possible, by inserting a catheter and/or needle into a major vessel or the heart, until the heart stops beating.

5.2.3. **Gunshot**

**NOTE:** All Cornell personnel wishing to use gunshot (e.g., firearms or air rifles) for euthanasia of vertebrates under an animal use protocol **MUST** be certified as proficient. Cornell personnel using firearms must also complete a safety training course. Proof of safety training and proficiency validation must be presented to the IACUC office and can be performed by an IACUC-designated person in Cornell’s Museum of Vertebrates, or Cornell’s Department of Natural Resources. Safety training can also be completed through a government sanctioned safety course.

5.2.3.1. Use of firearms and air rifles is limited to euthanasia of wild free-ranging vertebrates and must be approved by Cornell’s IACUC and is further limited to areas where discharge of firearms is lawful and permission of landowner and all necessary state and federal permits have been obtained.

5.2.3.2. Exercise extreme caution so as to not cause personal injury.

5.2.3.3. Use species appropriate firearm or air rifle and ammunition.

5.2.3.4. The preferred target area is the head. The appropriate firearm should be selected for the situation, with the goal being penetration and destruction of brain tissue.

5.2.3.5. A gunshot to the heart or neck does not immediately render animals unconscious and therefore cannot be used as a means of euthanasia.

5.2.3.6. Refer to the 2013 edition of the American Veterinary Medical Association Guidelines for the Euthanasia of Animals for more details.

5.2.4. **Other Physical Methods**

5.2.4.1. Additional physical methods of euthanasia are acceptable as per the AVMA Guidelines for the Euthanasia of Animals. For more details, refer to these guidelines or contact a CARE veterinarian.

6. **PERSONNEL SAFETY**

6.1. Medical Emergencies: **CALL 911.**

6.2. When working with animals wear appropriate PPE, observe proper hygiene, and be aware of allergy, zoonosis, and injury risks. Refer to the **CARE Occupational Health and Safety webpage** for more information.
7. ANIMAL RELATED CONTINGENCIES

7.1. Post contact information for emergency assistance in a conspicuous location within the animal facility.

7.2. Emergency veterinary care is available at all times including after working hours and on weekends and holidays:

7.2.1. Biomedical settings: CARE (pager 1-800-349-2456)
7.2.2. Farm animal settings: Ambulatory and Production Medicine Service at (607) 253-3140.

7.3. Non-emergency veterinary questions and requests for care, email CARE veterinary staff at care@cornell.edu.

8. REFERENCES

8.2. CARE Occupational Health and Safety webpage: http://ras.research.cornell.edu/care/OHS.html

9. APPENDIX

9.1. None

10. HISTORY

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 OCT 18</td>
<td>Most Recent Annual Review – Reviewed by: Dr. B. Blank</td>
</tr>
<tr>
<td>15 OCT 15</td>
<td>New Format – Converted by: J. Kirby</td>
</tr>
<tr>
<td>31 NOV 03</td>
<td>New Issued – Original Author: B. Collins; Referee: J. Wright</td>
</tr>
</tbody>
</table>