RED KITE
VETERINARY CONSULTANTS

Humane Methods of Killing

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Resources

- FLAIRE learning module on euthanasia (esp. rodents) Euthanasia in Laboratory Animals (researchanimaltraining.com)

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Why do we need to kill animals?

- Most animals are killed at the end of a series of regulated procedures. Animals may also be killed if they have reached the end of their breeding life. Tissues or blood may be required
- Animals must be killed at the end of procedures if they are suffering or likely to suffer
- Animals must be killed if they are suffering severe pain or distress that is not temporary and cannot be alleviated
- There must be specific permission in the PPL if an animal is to remain alive after completing regulated procedures
- For an animal to remain alive, a veterinary surgeon must determine that it will not continue to suffer as a result of the regulated procedures carried out

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Euthanasia

- 'Bringing about of a gentle and easy death'
- Good death – painless, quick and dignified
- ASPA defines death as "the permanent cessation of circulation or the destruction of the brain."
- Humane killing is not pleasant but as a PILh you will have to be able to do it
- The Act imposes restrictions on methods to use
- Make sure you are skilled in at least one method
- Expert handling skills – maximise animal welfare - REFINEMENT

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Is killing a regulated procedure?

- Killing an animal is a regulated procedure only if it is killed for experimental or other scientific use, and the method employed is not one appropriate to the animal under Schedule 1
- i.e. Killing an animal for a scientific purpose using a method described in schedule 1 as suitable for that type of animal is NOT a regulated procedure.
- Sometimes appropriate methods may be authorised on the PEL if equally humane

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Who may kill a protected animal?

- You must be registered as competent to kill animals in the register kept by the establishment licence holder. This registration will clarify the species and types of animals, and the killing methods, which are linked to the training and supervision you have undergone.
- There are no legal constraints under ASPA for a person killing an animal in emergency circumstances. However, in such an emergency, where it is necessary for an animal to be killed as a matter of urgency, it is good practice to ensure an appropriate method of killing is carried out by a competent person whenever possible.

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LO: 6.1.3 7

General Considerations

- Minimise fear and distress as much as possible
- Handle carefully, gentle restraint
- Always perform in the absence of others
  - remove traces of one animal before introducing another
- Ensure competence of operator
  - Training in method and use of any equipment
- Select appropriate method
- Confirm death before dispose of carcase
- Ensure there is someone always available to be able carry out S1. This will either be a member of care staff or people carrying out procedures.

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LO: 6.1.1 8

Choice of methods

- Factors to consider
  - Requirements of experiment
  - Species – weight, age, developmental stage
  - Equipment available
  - Expertise
  - Legal constraints (Schedule 1)
- Preparation
  - Practice to become competent
  - Handling must be competent
  - Location – away from others
  - Equipment – prepare it first

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LO: 6.1.12 9

ASPA Schedule 1

- H.O. Guidance
- Licence is not required, but competence is
- Schedule 1 register – Discuss with your NACWO
- Aim: unconsciousness, swiftly followed by cardiac and respiratory arrest
- Methods not listed in Schedule 1 are regulated procedures and require licence authority

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LO: 6.1.2 10

Schedule 1 methods

- A. Methods for animals other than fetal, larval and embryonic forms
- B. Methods for fetal, larval and embryonic forms
- Note that neonates fall into category A

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LO: 6.1.2 11

Schedule 1 methods for category A

- Overdose of an anaesthetic
- Exposure to carbon dioxide
- Dislocation of the neck
- Concussion of the brain
- Recognised method of slaughter

Schedule 1 permits sedation or anaesthesia to be used prior to application of any other method

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LO: 6.1.2 12

1. Overdose of Anaesthetic

- Use a route and agent appropriate for the size and species
- Aim to induce unconsciousness as quickly and humanely as possible
  - Injection
  - Inhalation
  - Immersion

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2. Exposure to carbon dioxide

- Concentration must be rising
- Rodents (not neonates <10d), birds up to 1.5kg
- Controversy
  - Exposure → nasal nociception and PAIN
  - Rising concentration: unconsciousness at 35% CO_2, no pain but dyspnoea and tachypnoea → distress
  - 10-15% CO_2 aversive
  - Time is needed for death to occur – must not remove too early or risk of recovery

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3 & 4. Physical Methods

- Confidence and manual dexterity are essential, do not hesitate
- These are distasteful for the operator, but are not necessarily distressing for the animal
- If you are not confident that you can do this right first time, use another method

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Dislocation of the neck

- Rodents up to 500g
- Rabbits up to 1kg
- Birds up to 1kg

If done correctly this is one of the quickest ways to humanely kill an animal

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Concussion

- Rodents & rabbits up to 1kg
- Birds up to 250g
- Amphibians & reptiles up to 1kg
- Fishes
- Requires considerable skill and must be performed correctly first time.

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5. Standard methods of slaughter

- Appropriate for ungulates, eg: free bullet, captive bolt
- Other legislation involved

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For Category B animals: fetal, larval and embryonic forms

- Overdose of anaesthetic - all species
- Refrigeration or disruption of membranes, or exposure to 100% CO_2 - birds and reptiles
- Cooling - mouse, rat, rabbit
- Decapitation - mammals & birds < 50g

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Confirmation of death

- Schedule 1 requires death to be “confirmed” before disposal of the animal. This is not optional.
  - Permanent cessation of circulation
  - Destruction of the brain
  - Dislocation of the neck
  - Exsanguination
  - Onset of rigor mortis
  - Mechanical disruption

- The animal must be killed before one of these “completions” is applied
- A different method from the method of killing must be used

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Summary

- Euthanasia must ensure a rapid death with minimal distress and pain.
- It must be reliable, irreversible, minimally distressing to operator, safe, and compatible with the experiment.

- This can be difficult for the researcher
- But - this is not necessarily the worst part for the animal.

- As a PILh you must take responsibility for taking the animal’s life. Whatever method you use, you must do it well.
- If in doubt whether you can do it properly, then don’t.

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