

## Standard Operating Procedures

### #AU 0016: General Humane Endpoints

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**Preamble:**

The assessment of pain and distress in animals is problematic since it can be subjective. Therefore, objective methods of assessing pain and distress in animals are valuable, and allow for potential refinements and techniques to be evaluated, and the implementation of humane endpoints. Subjectivity can be further reduced by obtaining an average score of animal distress based on the evaluation of two independent observers. By having clear criteria set to define the point at which humane interventions must be implemented, unnecessary pain and distress of a research animal can be prevented.

Humane interventions are defined as actions or instructions including, but not limited to, the following:

- a) Adequate veterinary treatment, analgesia and/or supportive therapy to the animal(s)
- b) Termination of painful procedures
- c) Removal of the animal(s) from the study
- d) Modification of the experimental procedures to minimize the discomfort to the animal(s)
- e) Increasing the frequency of animal observations
- f) Modification to the housing and husbandry practices to improve the comfort of the animal(s)
- g) Euthanasia

Pilot studies can be used to determine endpoints in cases where the course of disease, the experimental effects or the indicators of discomfort are otherwise unknown.

Ensuring appropriate endpoints involves the combined efforts of the Principle Investigator, the veterinary care staff and the ACC to carry out the following instructions:

- h) Determine the humane endpoints that are appropriate for the study.
- i) Ensure that humane endpoints points are clearly defined in the Animal Use Protocol (AUP).
- j) Ensure all personnel responsible for making animal observations have been adequately trained to observe and recognize the endpoints in the approved AUP.

**Procedure:**

Establishing endpoints:

- a) Review literature and perform web-based searches of established models and alternative methods. Implement the alternatives whenever possible.
- b) Consult with veterinary care staff on study refinements designed to minimize pain and distress.
- c) Schedule regular animal observations at an appropriate frequency to ensure early detection of signs of pain and discomfort.

- d) Increase the frequency of observations and measurements in response to a decline in the animal's condition and during pre-determined critical periods during the study. Use the *Animal Illness Report and Checklist* to establish an objective measure of animal distress.
- e) Keep records of all observations including specific measurements or data (e.g., body weight).

Recommended general endpoints:

- a) Weight loss exceeding 20% of baseline bodyweight. For young animals, failure to maintain normal weight gain within 15% of age-matched control animals.
- b) Uncontrolled seizures.
- c) Impaired mobility which interferes with normal eating, drinking, ambulating or grooming.
- d) No or weak response to external stimuli.
- e) Hypothermia.
- f) Mass that is ulcerated, necrotic or impairing normal function (e.g., eating, drinking) or exceeding acceptable size endpoints:
- g) Respiratory distress: labored breathing, increased or decreased respiratory rate, cyanosis
- h) Hunched posture, lethargy and lack of grooming.
- i) Incoordination, paralysis
- j) Abnormal vocalizations
- k) Pale eyes and/or extremities (rodents) or mucous membranes
- l) Uncontrolled hemorrhaging
- m) Self-mutilation
- n) Specific organ failure assessed by physical examination and, where possible, ancillary tests (hematology, biochemistry, imagery, etc).