University of Cincinnati
Animal Care and Use Program

Humane Endpoints

The purpose of this guideline is to assist researchers to provide a set of commonly used criteria for the establishment of humane intervention criteria. A humane endpoint is defined in the 8th edition of The Guide for the Care and Use of Laboratory Animals as “the point at which pain or distress in an experimental animal is prevented, terminated, or relieved”.

Questions - contact LAMS staff at 513-558-5174 or LAMS@uc.edu.

Humane endpoints

1. Each protocol, especially those anticipated to result in severe or chronic pain, should describe endpoint(s) and specify a plan and criteria for removal/euthanasia of animals from the study, or the disposition of animals at the termination of the study. For many studies, the endpoint will be euthanasia upon study completion, euthanasia at certain time points, or the return of animals to stock. For studies where moderate to severe clinical signs are anticipated, the endpoint description in the protocol shall include specific criteria (body weight, mass size, appetite, etc.) that will be monitored at prescribed frequencies (daily, weekly, etc), and a disposition (treatment, euthanasia, early removal from study, etc.) once those criteria have been met or exceeded.
2. Pilot studies using small number of animals should be considered when working with unfamiliar or novel models, investigational drugs, or if the approximate time for induced disease state or severity is unknown. Such pilot studies can assist the investigator in establishing clear, humane, and experimental endpoints, terminating studies before animal welfare is compromised.
3. Efforts should be made to minimize pain and distress experienced by animals used in research. To this end, the use of death as an endpoint to experimental studies, rather than performing euthanasia to humanely terminate an animal, is discouraged and should be justified.

Monitoring and Record keeping

The PHS policy requires proper documentation of animal care and use in order to assess compliance with research protocols and clinical care procedures.

1. Animals involved in experiments that may lead to moribundity or death should be monitored daily (including weekends) by personnel experienced in recognizing signs of morbidity. Once severe clinical signs develop, more frequent observation (2-3 times daily) may be required.
2. Each instance of observation requires a minimum recording of associated information: the date, observations, and initials of the observer.
3. A clear chain of command for the decision-making process should be documented, including contingency plans if said individuals are unavailable for consultation.

Selected Criteria for Euthanasia

The criteria below are clinical signs of illness or disease that constitute a humane endpoint include, but are not limited to:

1. Weight loss: Loss of 20% body weight compared to the pre-study weight or to age-matched controls.
2. Body Condition Score (BCS). A BCS of less than 2
3. An animal found to be in a state of dying with little likelihood of recovery, showing some or all of the following symptoms: severe depression, lack of movement; complete anorexia, hypothermia.
4. Unrelieved pain/distress - signs of significant pain and/or distress which are unresponsive to analgesics/anesthesia, or as determined by a veterinarian.
5. Surgical complications unresponsive to medical intervention.
6. Combination of the following: poor physical appearance (very rough hair coat, hunched posture, distended abdomen in conjunction with other clinical signs, grunting on exhalation); abnormal behavior (reduced mobility/unconsciousness, unsolicited vocalizations, self-mutilation); severe depression or abnormal/exaggerated responses to external stimuli.
7. Inability to ambulate to reach food or water
8. Severe respiratory distress, which is unresponsive to treatment.
9. Occurrence of a serious injury or trauma from which recovery is unlikely.
10. Neurological signs (e.g., persistent convulsions, persistent circling, paresis/paralysis) that interfere with eating and drinking and from which recovery is unlikely.
11. Frank bleeding from any orifice, which is unresponsive to treatment.
12. One or more skin ulcers that do not heal, depending upon the species and severity of the ulcers.
13. Self trauma or self mutilation
14. Additional criteria for humane endpoints for tumor studies are found in the Tumor monitoring guidelines.

Exceptions to the humane endpoints are only approved by the IACUC as part of the protocol review process.

References:

1. Animal Welfare Act and Regulations
2. Guide for the Care and Use of Laboratory Animals
3. Public Health Service Policy
4. Montgomery CA. 1990. Oncologic and toxicologic research: Alleviation and control of pain and distress in laboratory animals. Canc Bull 42(4):230-237.
5. Stokes WS. 2002. Humane endpoints for laboratory animals used in regulatory testing. ILAR J 43 (Suppl):S31-S38