

<b>Institutional Animal Care and Use Committee</b>		<b>UNTHSC</b>
<b>Title:</b> Humane Endpoints		
<b>Document #:</b> 008	<b>Version #:</b> 03	
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**A. BACKGROUND INFORMATION**

- a. The purpose of this document is to provide guidelines for investigators to use when writing an Animal Use Protocol involving humane endpoints that reduces animal pain and distress, while still meeting research objectives when animals are used for biomedical research and teaching.

**B. RESPONSIBILITIES**

- a. It is the responsibility of all investigators using animals in research or teaching at UNTHSC, the animal care staff and the IACUC to abide by and enforce these procedures.
- b. Investigators are expected to:
  - i. Use alternative end points when possible.
  - ii. Minimize animal numbers within statistical constraints.
  - iii. Have experimental animals monitored at least twice daily, i.e., early morning and late afternoon, during the work week. On weekends and holidays, animals will be monitored on a once daily basis unless animals are expected to be in a morbid state.
  - iv. Euthanize any animals found in a moribund state except when death is the end point as approved by the UNTHSC IACUC.

**C. PROCEDURES**

- a. Euthanasia as an alternative to death as an endpoint in Rodents:
  - i. Legal, regulatory, and moral guidelines require that animal pain, distress, and suffering be minimized in any experiment. For these reasons, investigators are strongly encouraged to administer euthanasia, if experimental validity will not be compromised, in death-end-point experiments prior to actual death of the animals. These objectives assume that investigators can differentiate between animals that are morbid (i.e., affected with disease or illness), and those that are moribund (i.e., in the state of dying)
  - ii. The IACUC believes that an investigator can judge and should perform euthanasia on moribund rodents based on objective signs or symptoms of dying depending on experience with the animal model, professional judgment, and the experimental protocol. The combination of signs of symptoms indicating euthanasia may vary with experimental end point.
  - iii. The IACUC guidelines indicate that animals found moribund should receive euthanasia, but if experimental death itself is the required end point, the investigator may receive consideration for approval to conduct such studies by

providing appropriate justification in the approved IACUC Protocol. Inconvenience or increased costs alone are not justifiable reasons, but the IACUC will otherwise, generally, accede to the scientific judgment of the investigator. Investigators are expected to make a good faith effort to justify their end points, or agree they can judge when to perform euthanasia on animals found moribund in a particular protocol. Moreover, all investigators are expected to continue to monitor experimental animals at least daily (including weekends and holidays), to euthanize any animals which they judge should receive euthanasia, to use alternative end points to death when possible, and to minimize animal numbers within statistical constraints in general, but especially in death-end-point protocols.

- iv. The following shall be included in the protocol if death is an endpoint:
  1. Written justification when appropriate including:
    - a. Discussion of alternative endpoints
    - b. Literature citation
    - c. Copies of pertinent publications where appropriate
  2. Justification of the number of animals to be included
  3. Justification for the withholding of analgesics, if applicable
  4. At least twice daily monitoring once animals exhibit abnormal signs (at least 6-8 hours apart)
  5. Maintenance of written records of monitoring
- v. Suggested Signs and Symptoms for Judging Morbidity (disease/illness) in Rodents:
  1. Rapid breathing rate
  2. Breathing rate very slow, shallow, and labored
  3. Rapid weight loss
  4. Hunched posture
  5. Hypo- or hyperthermia
  6. Ulcerative dermatitis or infected tumors
  7. Anorexia (loss of appetite)
  8. Diarrhea or constipation
- vi. Suggested Signs and Symptoms for Judging the Moribund Condition (state of dying) in Rodents. Signs and symptoms of morbidity will be observed plus:
  1. Impaired ambulation ( unable to easily reach food or water)
  2. Evidence of muscle atrophy or other signs of emaciation (body weight is not always appropriate, especially since tumors may artificially increase body weight)
  3. Any obvious illness including such signs as lethargy (drowsiness, aversion to activity, lack of physical or mental alertness), prolonged anorexia, bleeding, difficulty breathing, central nervous.
  4. Inability to remain upright

- b. Criteria for euthanasia in animals
  - i. When an animal meets any of the following criteria, it should be considered for euthanasia:
    - 1. Rapid weight loss (animals are weighed a minimum of twice per week) of 15% or greater body weight
    - 2. Debilitating diarrhea
    - 3. Labored breathing
    - 4. Lethargy
    - 5. Persistent recumbence
    - 6. Significantly abnormal neurological signs
    - 7. Bleeding from any orifice
    - 8. Self-induced trauma
    - 9. Impaired mobility
    - 10. Difficulty obtaining food and water
    - 11. Inability to maintain normal body temperature
    - 12. Clinical signs of pain that do not respond to analgesics
    - 13. Tumor greater than 2 cm (measured in any direction)
    - 14. Necrotic or ulcerated tumors
    - 15. Animal refuses to eat or drink for a significant length of time

#### **D. REFERENCES**

- a. Institute of Laboratory Animal Resources (2011). Guide for the Care and Use of Laboratory Animals. National Academies Press, Washington, D.C.
- b. Animal Welfare Act, Public Law 89-544 as amended; codified at 7 U.S.C. 2131-2159.
- c. PHS Policy on Humane Care and Use of Laboratory Animals, NIH, Office of the Director, Revised 2015.
- d. Office of Animal Care and Use, Animal Research Advisory Committee, National Institutes of Health. Guidelines for Endpoints in Animal Study Proposals. [http://oacu.od.nih.gov/ARAC/documents/ASP\\_Endpoints.pdf](http://oacu.od.nih.gov/ARAC/documents/ASP_Endpoints.pdf).