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UNIVERSITY STANDARD

Title

UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL STANDARD ON HUMANE ENDPOINTS IN RODENTS

Introduction

PURPOSE

The standards and procedures described below provide guidance to all researchers and animal handlers regarding the humane endpoints for laboratory rodents utilized in research, teaching, or testing.

SCOPE OF APPLICABILITY

All personnel engaged in hands on husbandry or research involving laboratory rodents. It is essential that humane endpoints be established within the approved IACUC protocol and that personnel understand and adhere to those endpoints.

The UNC-CH IACUC expects that anyone involved in animal work at the University will comply with this Standard. Requests for exceptions to this Standard must be reviewed and approved by the IACUC and/or DCM Veterinarian.

Standard

“The Experimental Endpoint of a study occurs when the scientific aims and objectives have been reached. The Humane Endpoint is the point at which pain or distress in an experimental animal is prevented, terminated, or relieved. The use of humane endpoints contributes to refinement by providing an alternative to experimental endpoints that result in unrelieved or severe animal pain and distress, including death.” (8th edition of the Guide for the Care and Use of Laboratory Animals, 2011):

1. Efforts should be made to either alleviate pain or distress or the animal should be euthanized. Federal guidelines require that the humane endpoints take into consideration the scientific requirements of the research, the time course and progression of any expected or potential adverse effects the animals may experience, and the earliest and most predictive indicators of impending adverse effects or morbidity. In certain specialized models, where there are expected levels of morbidity or mortality (e.g., experimental autoimmune encephalitis), humane endpoints should be developed on a case-by-case basis in conjunction with the clinical veterinarians



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and the IACUC. The UNC IACUC requires that all animals be monitored at least once daily by personnel trained and experienced in recognizing signs of illness, injury, or abnormal behavior for at least the following:

- a. Abnormal appearance: abnormal posture, rough coat, head tucked into abdomen, exudate around eyes and/or nose, skin lesions, abnormal breathing.
- b. Abnormal activity: lethargy, abnormal movement, decreased food or water intake, self-mutilation.
- c. Body weight: rapid weight loss, or more than a 20% decrease in body weight,

(This daily monitoring is usually done by DCM staff, however, lab staff are expected to monitor their animals periodically during the week as well.)

2. Animals with abnormalities may be removed from group housing and housed individually to provide easy access to food and water. Laboratory personnel will be notified and must make an assessment shortly thereafter, whether to continue to use the animal in the study. If personnel directly responsible for the project cannot be contacted, veterinary services should be contacted (phone 919-966-2906 or 919-216-1235 after hours). It is good practice for the investigator to determine, in advance of an emergency, what procedures should be used to care for abnormal animals. In all instances, veterinary services should be notified that animals are showing clinical signs of disease.
3. Moribund implies a severely debilitated state that precedes imminent death and is often interpreted to mean an animal that is prostrate and unresponsive. However, far less severe clinical signs, such as decreased body temperature or rapid weight loss, can be accurate predictors of death in experimental systems. Moribund is NOT considered an appropriate Experimental endpoint and investigators should identify less severe endpoints that will meet the scientific needs of the study. All animals discovered to be moribund must be euthanized.
4. Animals showing any of the following signs should be euthanized by approved methods, regardless of whether they are endpoints specifically listed in the protocol:
 - a. Inability to ambulate or maintain an upright position that prevents the animal's easy access to food and/or water.
 - b. Agonal breathing and cyanosis.
 - c. Severe muscular atrophy or other signs of emaciation (Body Condition Score ≤ 2)
Refer to the UNC Standard for Tumor Bearing in Laboratory Rodents for body



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condition scoring. (p.3 <http://research.unc.edu/files/2012/11/Tumor-Burden-Policy.pdf>).

d. Severe ulceration of skin or uncontrolled bleeding.

(Note that most endpoints listed in the protocol address clinical signs to use as endpoints that would occur before an issue progressed to the endpoints that are listed above.)

5. As animals approach the clinical sign endpoints in the protocol, or if the animals are experiencing increased morbidity or mortality in the study, the IACUC requires a minimum of twice daily monitoring at least 6 hours apart, with the frequency of monitoring increasing as the conditions worsen. Those animals that are not expected to survive until the next scheduled evaluation should be euthanized
6. Written records of monitoring sessions may be required, depending on the protocol and the endpoints and should be made available to the attending veterinarian or the IACUC staff on request.
7. Unexpected phenotypes that affect the morbidity or that cause mortality should be reported to IACUC. A review of the endpoints in the protocol, written prior to the knowledge of the result, and revision of the endpoints (once the end result is known) may be required to address new issues in the phenotype. In addition, more frequent monitoring of the animals may be needed. (p 28, 8th edition of the Guide for the Care and Use of Laboratory Animals, 2011).
8. Studies that require animals to experience unrelieved pain or distress prior to reaching the endpoint or those requiring morbidity or death as the endpoint will not be considered by the IACUC unless an exception to policy is requested and approved.

EXCEPTIONS

Requests for exceptions to this Standard must be reviewed and approved by the IACUC and/or DCM Veterinarian.

Definitions

IACUC: Institutional Animal Care and Use Committee

DLAM: Division of Laboratory Animal Medicine, now called DCM

DCM: Division of Comparative Medicine

University Standard: The minimum acceptable limits or rules used to achieve Policy implementation, enforceable by the IACUC



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Humane endpoint: The point at which pain or distress in an experimental animal is prevented, terminated, or relieved.

Morbidity: At or near death.

Euthanasia: The act of inducing humane death in an animal with minimal pain and distress.

Related Requirements

UNIVERSITY POLICIES, STANDARDS, AND PROCEDURES

For more general guidance, please refer to the [University Policy on the Care and Use of Vertebrate Animals for Research, Training and Teaching Purposes](#).

Contact Information

Subject	Contact	Telephone	Email
IACUC Protocol and Training	OACU	919-966-5569	iacuc@med.unc.edu
Veterinary Services	DCM/ DLAM	919-966-2609	

Important Dates

- Effective Date and title of Approver: 01/27/1999; UNC IACUC
- Revision and Review Dates, Change notes, title of Reviewer or Approver: March 16, 2007, March, 2014; UNC IACUC

Approved by: UNC IACUC

Dr. Mitchell Picker
UNC IACUC Chair

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