Institutional Animal Care & Use Program - UTEP	
Title: Defining Humane Endpoints	
Policy#: 003	**Date in Effect**: 26 September 2014
Version #: D	**Rev Date**: 28 April 2025
In Effect ☒ **Rescinded** ☐	**Date Rescinded**:

A) RESPONSIBILITIES

It is the responsibility of all personnel using animals at The University of Texas at El Paso (UTEP) to abide by this policy.

B) APPLICATION

Researchers have a moral, ethical, and legal obligation to minimize pain and distress in pursuit of reliable, reproducible data. Appropriate humane endpoints provide opportunities for refinement and reduce confounding systemic effects which may increase the precision of the data. All studies must describe humane endpoints in their animal use protocol.

C) DEFINITIONS

Humane Endpoints – Predetermined physiological or behavioral signs that define the point at which an experimental animal's pain and/or distress is reduced or terminated through actions such as halting a procedure, providing appropriate treatment or analgesia, or humane euthanasia.

Morbidity – A condition of being unhealthy or diseased.

Moribund – A severely debilitated clinical state that precedes imminent death.

D) PROCEDURES:

Humane endpoints must be clearly defined and based on objective criteria (see Table below for examples). They are study specific and should be formulated through discussion with the PI, IACUC, and veterinarian while considering the following:

a. Animal model and normal species-specific behaviors
b. Scientific goals and experimental endpoints
c. Expected and/or potential adverse effects (pain, distress, illness, death, etc.)
d. Probable progression and timeline of adverse effects
e. Earliest most predicative indicators of present or impending adverse effects

Monitoring for humane endpoints must be described in the protocol, including specific assessment criteria and the frequency of animal observation and assessment. **The action(s) to be taken when an animal reaches a humane endpoint must be described in the protocol and must include either:**

a. Institution of appropriate treatment and either pausing study participation or permanent removal from study; or

b. Humane euthanasia

The IACUC considers the following clinical signs as humane endpoints for animals exhibiting study adverse effects and/or spontaneous disease. For an animal to continue on study while exhibiting these clinical signs, it must be described and approved in the IACUC protocol with alternative humane endpoints and appropriate monitoring plans; or undergoing an appropriate treatment prescribed by LARC veterinary staff. Failure to respond to treatment is considered an endpoint and the animal must be humanely euthanized.

Body System	**Clinical Signs**
General/Systemic	Weight loss >20% of body weight or age-matched controls and/or a body condition score (BCS) <2/5 (Figure 1) Lateral recumbency, loss of righting reflex Moribundity Pain which fails to respond to analgesia Any condition that interferes with ability to eat/drink/ambulate Dehydration that fails to improve with fluid therapy within 48 hours Abdominal distension or ascites Systemic edema Excessive or prolonged hypothermia or hyperthermia Anemia (pallor), jaundice Tumor which exceeds 15% of the body weight; ulcerated, necrotic, or infected tumors Tumors that interfere with eating/drinking/ambulation Skeletal fractures Tail and/or appendage necrosis Bleeding from any orifice

Body System	Clinical Signs
Integumentary System	Dermatitis that fails to resolve with treatment Skin lesions with underlying muscle exposed Infected surgical incisions that fail to resolve with treatment
Ocular	Infections that fail to resolve with treatment Buphthalmia (enlargement of the eye) Exophthalmos (protrusion of the eye)
Respiratory system	Cyanosis Increased respiratory effort Abnormal respiratory rate Open-mouth breathing
Digestive system	Anorexia (lack or loss of appetite) or failure to drink Malocclusion Hematochezia/melena (blood in feces)
Reproductive system	Paraphimosis that fails to resolve with treatment Vaginal/uterine prolapse
Renal system	Anuria (lack of urine production) or inability to urinate due to trauma or obstruction
Nervous system	Seizures Ataxia/paresis/paralysis Head tilt/circling/rolling

*Treatment of any of the above conditions must be directed by LARC veterinary staff.

Death or Moribundity as an Experimental Endpoint

Every attempt should be made to recognize and humanely euthanize an animal prior to moribundity or death. However, there are some studies that require moribundity or mortality as an endpoint.

Signs of a moribund animal include, but are not limited to:

- Lateral recumbency or immobility
- Lack of response to stimulation
- Inability to eat or drink
- Hypothermia[13]

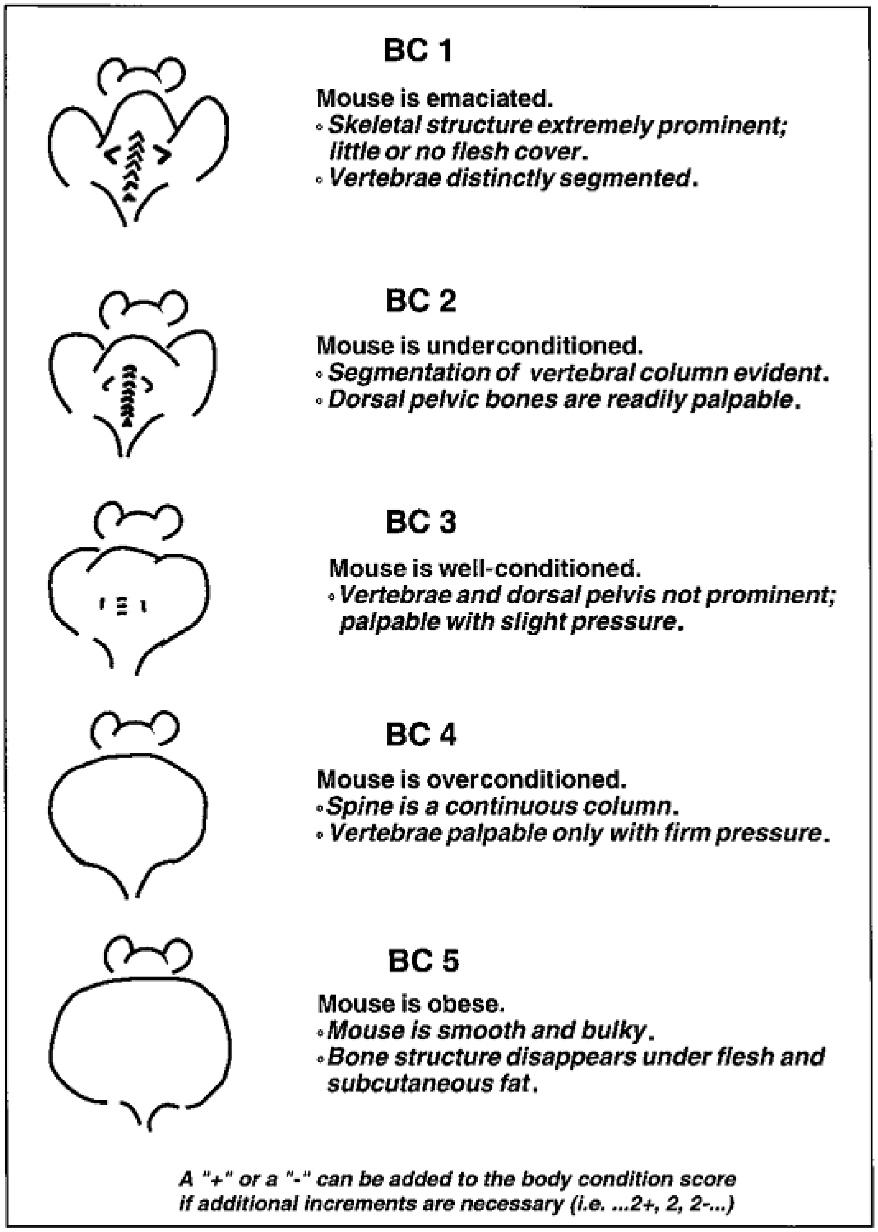
Studies that require death or moribundity as an endpoint must be classified as a pain and distress category E.

The protocol must include the following information:

- A robust scientific justification including:
  - Specific alternatives or refinements that were considered.
  - Why earlier humane endpoints cannot be employed?
  - Whether animals will be humanely euthanized if moribund, and if not, what additional information can be gained from the interval between moribundity and death.
- Detailed monitoring plans
  - Frequency of monitoring should increase with morbidity . For example, minimal (Once daily) / moderate (2~3 times daily) / severe or terminal (Every 4~6 hours or continuously).

Figure 1

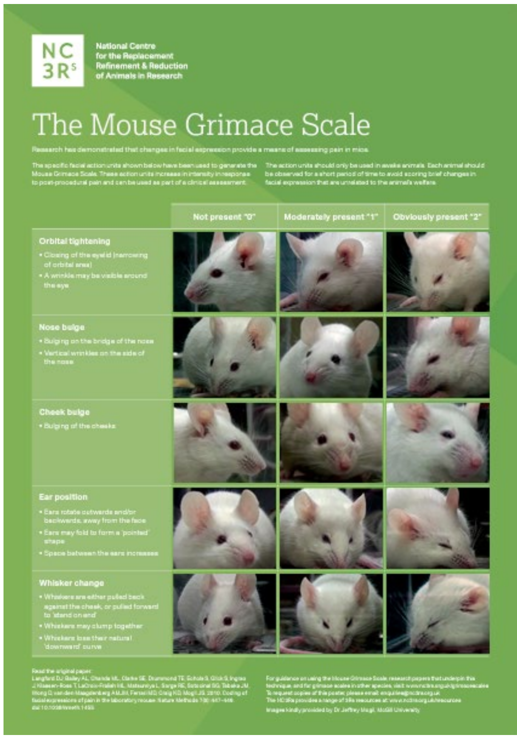
1) **Body condition scoring systems**
   a) **Mouse body condition score**

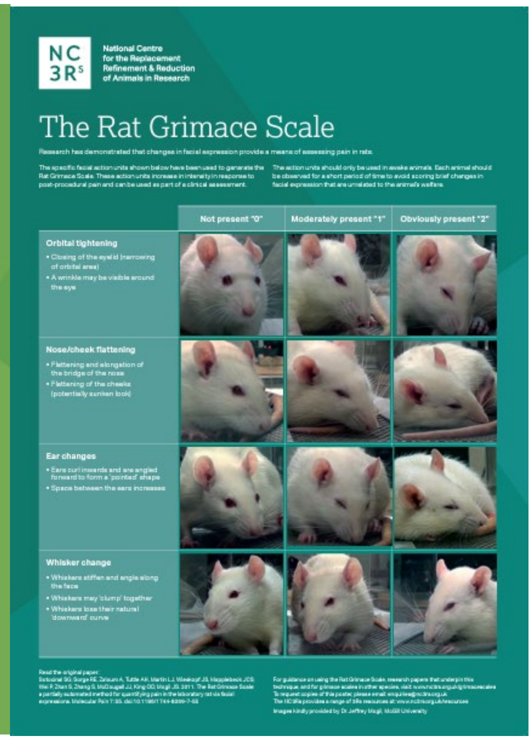


2) **Pain scoring systems**

a) **Grimace scales**

i) Mouse and Rat Grimace scales available at: https://www.nc3rs.org.uk/3rs-resources/grimace-scales





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8) Guidelines for Endpoints in Animal Study Proposals. NIH OACU 27 April 2022. https://oacu.oir.nih.gov/system/files/media/file/2022-04/b13_endpoints_guidelines.pdf
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12) Toth LA. (2018) Identifying and Implementing Endpoints for Geriatric Mice. Comp. Med. 68: 439-451.

Review History	
Revision Version:	**Revision Date**:
A	26 September 2014
B	16 December 2019
C	26 February 2024
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