

# UCUCA Policy for End-Stage Illness and Humane Endpoints

Compliance with all governing regulations involving humane care and use of animals in research is mandatory at the University of Michigan. Legal, ethical, and regulatory guidelines obligate all personnel involved with research protocols utilizing animals to ensure that animal pain, distress, and suffering is minimized. Therefore, the University Committee on Use and Care of Animals (UCUCA) highly discourages death-as-an-endpoint studies.

**The UCUCA and the Unit for Laboratory Animal Medicine (ULAM) veterinary staff require investigators to humanely euthanize all moribund animals rather than allowing them to die spontaneously.** Euthanasia methods must be in compliance with the current [Report of the AVMA Panel on Euthanasia](#). If euthanasia prior to actual death would invalidate the experiment, investigators may receive UCUCA approval after sound scientific and ethical justification is provided. Inconvenience is not reasonable justification.

Investigators are obligated to make every effort to identify and humanely euthanize moribund animals. The husbandry staff performs a health status check of all animals daily. Once animals start to display clinical signs of illness, investigators or laboratory personnel must monitor their subjects at least twice a day (suggested early morning and late afternoon) to ensure quick identification of moribund animals or animals for which previously defined humane endpoints have been reached. This includes weekends and holidays.

**Humane endpoints** are criteria used to end experimental studies in individual animals in order to avoid or terminate unrelieved pain and/or distress. These are intended to not disrupt the integrity of the study. Once a humane endpoint is reached, the animal should be immediately euthanized or treated as outlined in the protocol.

**End-stage illness** is defined as signs of a debilitating physical state where death is imminent and treatment ineffectual. Animals exhibiting severe signs of morbidity or a moribund state would constitute end-stage illness. Investigators should feel confident in judging the condition of their animal subjects, differentiating between a morbid and moribund animal, and agree to perform approved euthanasia when necessary. The following lists will aid investigators and laboratory personnel in identifying morbid and moribund animals. In addition, for experiments in which animals are inoculated with neoplastic cells or toxic agents, the [ULAM Tumor Burden Scoring System](#) should be used. If there is any question or concern about judging the condition of animal subjects, please contact the ULAM veterinary staff immediately by calling 734-764-0277.

A **Morbid state** is a condition relating to, or typical of, disease or illness. Any animal exhibiting two or more signs of morbidity should be reported immediately to the ULAM veterinary staff. If a single morbid condition persists for more than 24 hours or the condition worsens in 12-24 hours, the animal should also be reported to the ULAM veterinary staff.

The following are signs for evaluating **morbidity** in animals:

- ◆ Hunched posture
- ◆ Sunken eyes, with or without discharge
- ◆ Respiration that has increased, decreased, or appears labored
- ◆ Rapid weight loss (more than 10% of body weight)
- ◆ Decreased or no intake of food
- ◆ Hypothermia or hyperthermia
- ◆ Ruffled hair coat, erection of hair or fur, lack of grooming behavior
- ◆ Diarrhea or constipation
- ◆ Vomiting
- ◆ Unsteady gait or lameness not induced by experimental manipulation
- ◆ Ulcerated tumors
- ◆ Severe or ulcerative dermatitis

A **Moribund state** is defined as a state of dying. Any animal exhibiting these characteristics would be considered to have end-stage illness and should be euthanized immediately.

The following are signs for evaluating **moribund condition** in animals:

Signs of morbidity plus:

- ◆ Impaired mobility (the inability to reach food and water)
- ◆ Inability to remain upright
- ◆ Hunched posture for more than 48 hours
- ◆ Labored breathing and cyanosis (blue color to skin or mucous membranes)
- ◆ Clinical dehydration and/or prolonged decreased food intake (more than 48 hours)
- ◆ Muscle atrophy and signs of lethargy and lack of physical activity
- ◆ Severe, rapid weight loss and emaciation (more than 20% of body weight)
- ◆ Chronic diarrhea or constipation for more than 48 hours
- ◆ Hematological or biochemical values that indicate organ failure
- ◆ Prolonged frank bleeding from any orifice
- ◆ Self-mutilation
- ◆ Unconsciousness with no response to external stimuli

To summarize, all investigators and laboratory personnel utilizing animals in research need to be cognizant of the well-being of their animals. The health and well-being of research animals should be monitored at least once daily. Once clinical signs are observed, animals must be observed by the laboratory personnel at least twice a day. The observations should be timed to occur early and late in the workday. If an animal is found moribund, it must be euthanized according to the approved protocol. Alternatively, once a humane endpoint is reached, the animal should be immediately euthanized or treated as outlined in the protocol. Alternatives to proposing death-as-an-endpoint studies are mandated except in specific circumstances where scientific and ethical justification is provided. Any questions or comments should be directed to the UCUCO Office at 734-763-8028.