

Guideline Number:	IG011
Approved By:	IACUC
Approval Date:	05/08/2025
Version:	5

IG011: ESTABLISHMENT OF HUMANE ENDPOINTS

The Guide for the Care and Use of Laboratory Animals 8th edition (Guide) states that all studies employ endpoints that are humane. Humane endpoints are a critical component of the protocol and must be reviewed and approved by the IACUC.

A humane endpoint is defined in the Guide as "the point at which pain or distress in an experimental animal is prevented, terminated, or relieved." as the earliest indicator in an animal experiment of potential pain and/or distresscan be used to avoid or limit pain and/or distress by taking actions such as [euthanasia] or terminating or alleviating the pain and distress' (Hendriksen and Morton, 1999). For additional guidance on establishing humane endpoint for research animals Humane endpoints | NC3Rs.

An experimental endpoint is defined as an endpoint that occurs when the proposed scientific aims and objectives of the study have been reached.

Many studies utilize "experimental endpoints," which involve the euthanasia or removal of animals from the study when scientific objectives have been met at a pre-determined timepoint. However, there are circumstances when an animal may become ill, debilitated, or experience unalleviated pain or distress. either as a result of experimental procedures or spontaneous disease. Humane endpoints must be utilized in these cases. The use of humane endpoints contributes to the "Refinement" principle of the Three R's by providing an alternative to experimental endpoints that may be reached prior to completion of the experiment.

The PI must identify, describe, and include in the animal use protocol endpoints that are both humane and scientifically sound. The IACUC and veterinary staff will be able to best assess proposed humane endpoint considerations in a protocol with the following key information:

- precise definition of the humane endpoint (including assessment criteria)
- consideration of species-specific body condition scoring (BCS) algorithms •
- frequency and scheduling of animal observation, to include increased frequency of body weight measurements, and assessments of appetite, attitude, mobility, etc with progression of the study
- training of personnel responsible for assessment and recognition of described humane endpoints
- actions to be taken for animal health preservation upon reaching a described humane endpoint

Establishment of species-specific study-appropriate humane endpoints should involve the research team (Principal Investigator), a CAR or Farms Veterinarian, and representatives from the IACUC. Humane endpoints are to be defined (when possible) prior to the initiation of the study. Please contact carvets@msu.edu or msufarmvet@msu.edu with any questions or consultation requests on defining humane endpoints.

Special Considerations:

The Guide indicates that while all studies should employ endpoints that are humane, studies that commonly require special consideration include those that involve:

- Tumor Models
- Infectious Diseases
- Vaccine Challenges



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- Pain Modeling •
- Trauma •
- Production of Monoclonal Antibodies ٠
- Assessment of Toxicological Effects
- Organ or System Failure •
- Models of Cardiovascular Shock •

These models often cannot utilize default humane endpoint guidelines and therefore should be developed on a case-by-case basis in conjunction with the IACUC and CAR veterinarians.