

# Institutional Policy on Endpoints for Studies Involving Solid Tumors

(Approved by IACUC on June 7, 2000)

**"Endpoint"** can be defined as the point at which an experimental animal's pain and/distress is terminated, minimized or reduced by taking actions such as killing the animal humanely, terminating a painful procedure, or giving treatment to relieve pain and/ or distress. Humane endpoints used, should be subject to a continuous process of refinement . Guidelines would be modified and updated as necessary.

It is important that pain and/or distress evaluation criteria will be established before describing endpoints. It is essential that everyone working with animals, familiarize themselves with the signs of pain, discomfort and distress. Quantitative assessment of pain based on evaluating five aspects of an animal 's condition, has been suggested (see [enclosure 1](#) ). It is important to be aware of the characteristic behavior of the species under observation. Animals such as non-human primates, rodents, rabbits and some livestock may not show many behavioral changes even when in severe pain ( see [Table I and II](#) ). The use of observational "checklists" for scoring the animal's condition in a study provides an objective basis on which decisions about endpoints can be made.

In studies involving solid tumors the following endpoints should serve as guidelines to reduce animal pain and distress while still satisfying the experimental design requirements for animals used in biomedical research, teaching and testing.

In accordance with this, the animals should be humanely killed when no resolution of pain and/or distress signs have been obtain after treatment, or one of the following condition first occurs:

<b><i>Solid Tumors Endpoints</i></b>	<b><i>Criteria</i></b>	<b><i>Clinical Assesment</i></b>
<b>Tumor Size</b>	Not to exceed 5% of normal body weight for tumor passage	Frequent weighting (3-5 times/week). Frequent measurements of solitary tumors ( 1cm <sup>3</sup> =1gm)
	Not to exceed 10% in therapeutics experiments	
<b>Physical Characteristics of Tumor</b>	Evidence of necrosis , sepsis or metastasis	Physical examination: Scabbing, ulceration, exudates, anorexia, *hypothermia.  Restricted ambulation, inability to access food or water  Circling, blindness, dementia, convulsions.  Assessment of pain/distress
	Evidence of local invasiveness	
	Neurological impairment	
	Distention of covering tissues causing pain or distress	
<b>Cachexia Chronic Wasting</b>	Weight loss>20% of normal body weight	Frequent weighing
<b>Signs of Organ or System Failure</b>	Respiratory	Dyspnea, rapid or labored breathing ,coughing, rales
	Cardiovascular	Shock, hemorrhage, anaphylaxis
	Gastrointestinal	Unresponsive diarrhea(2>days duration),vomiting
	CNS	Circling, blindness, dementia, convulsions, Unresponsiveness
	Integument	Extensive hair loss, inflammation, self trauma
<b>Tumor location</b>	Head/neck and extremities	Inability to access or ingest food and water, inability to ambulate and keep clean and dry
<b>**Moribund or Pre-moribund State</b>	Defined with specific clinical test or signs	

\*Hypothermia- can also be an important indicator of a deteriorating condition in the animal. In specific experimental cases, the point at which the body temperature of an experimental animal drops to a specified temperature could be set as the endpoint at which euthanasia is recommended.

\*\*The animal in a moribund state may past suffering ( and actually comatose). A moribund animal is one that is close to death and may be comatose or unresponsive to stimuli, exhibit dyspnea or other severe breathing problems, hypothermia, prostration, etc. However, before the animal gets to the point of being moribund, detailed observations of the animal can help to set an earlier endpoint and thereby reduce the actual cost to the animal, in terms of pain and distress.