



Tumor Burden Scoring

304.1 Purpose:

304.1.1 To establish guidelines that will allow Emory University laboratory and DAR staff to objectively evaluate the health and welfare of animals carrying spontaneous or experimentally-induced tumors and determine when euthanasia might be warranted to alleviate pain and distress associated with these tumors. The recommendations presented in this document are intended to augment, not supersede, guidelines presented in other documents such as the Emory University *IACUC Endpoints Guidelines*.

304.2 General:

304.2.1 In using animal models for the study of cancer, it is typically necessary that the animals utilized experience tumor growth and possibly metastatic disease. These processes can ultimately be very debilitating for the animal. In order to maximize study data acquisition and minimize animal pain and distress, the general health and welfare of test subjects needs to be continually and comprehensively assessed and documented as tumors and associated disease progress. The PI and/or research staff is responsible for monitoring the animals for endpoint criteria. With these health assessments, DAR veterinary personnel in conjunction with laboratory personnel can determine when euthanasia is appropriate for the animal. If a disagreement occurs regarding when euthanasia is appropriate, the final decision is determined by the veterinarian or veterinary personnel. If communication with responsible laboratory personnel is not possible, euthanasia will be performed at the discretion of DAR veterinary staff.

304.2.2 When assessing the general health of animals utilized in studies of cancer, the following clinical presentations warrant development of a management plan as they indicate diminished health status that may be associated with increasing tumor burden and metastasis:

304.2.2.1 Weight loss and decreasing body condition

304.2.2.2 Severe diarrhea

304.2.2.3 Progressive dermatitis

304.2.2.4 Rough hair coat, hunched posture, lethargy, and recumbency

304.2.2.5 Respiratory-associated symptoms such as labored breathing, coughing, and nasal discharge

304.2.2.6 Icterus/Jaundice

304.2.2.7 Hemorrhage from any orifice

304.2.2.8 Neurological signs such as circling or ataxia

304.2.2.9 Self-trauma

304.2.2.10 Difficulty with ambulation that might interfere with food and water acquisition

304.2.2.11 Ulceration and necrosis of visible tumors

304.3 Scoring System:

304.3.1 To supplement the general criteria presented above, the following is a system to objectively establish a cumulative health score for an animal. The animals should be evaluated in each of the areas presented and a total score determined. Actions for a range of scores are also provided on the next page.

304.3.1.1 Body Condition Score (See DAR *Mouse Health Monitoring* document for guidance)

- a. BCS of 3; Score=0
- b. BCS of 2; Score=8
- c. BCS of 1; Score=14

304.4.3.1.2 Tumor size (NOTE: In cases with multiple tumors, score will be based on the largest single tumor measured)

- a. Any individual tumor ≤ 7 mm in any dimension; Score=0
- b. Any individual tumor 8-17 mm in any dimension; Score=5
- c. Any individual tumor 18-20 mm in any dimension; Score=14
- d. Any individual tumor >20 mm in any dimension; Score=17

304.4.3.1.3 Tumor ulceration

- a. Absent; Score=0
- b. Present; Score=8
- c. Present with purulent discharge or other signs of infection; Score=18

304.4.3.1.4 Activity level, attitude, and behavior

- a. Bright, alert, and normally responsive to stimuli; Score=0
- b. Alert and less responsive to stimuli; Score= 4
- c. Lethargic and less responsive to stimuli; Score=8
- d. Moribund; Score=18

304.4.3.1.5 Mobility/ambulation

- a. Normal ability to ambulate; Score=0
- b. Hindered ability to ambulate, but can acquire food and water; Score=8
- c. Impaired ability to ambulate and unable to acquire food and water; Score=18

304.4.3.1.6 Bodyweight Change

Standard IACUC endpoints apply (see Policy)

Cumulative Score	Appropriate Action
0-7	Routine monitoring as described in IACUC protocol is adequate.
8-13	Lab must develop management plan in coordination with DAR. Supportive therapy likely adequate.
14-17	Lab must develop management plan in coordination with DAR. Euthanasia should be considered.
>17	Euthanasia is mandatory and this action must be coordinated with DAR. If the laboratory personnel and the veterinarian or veterinary staff disagree regarding when euthanasia is appropriate, the final decision is determined by the veterinarian or veterinary personnel.

304.4 Document Properties

Approved 04/03/2013

Version: v.20140211