

Institutional Animal Care and Use Committee		UNTHSC
Title: Pain and Distress		
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A. BACKGROUND INFORMATION

“What level of pain do we allow?” is a question facing all animal care and use committees. The IACUC must somehow reconcile the research’s physical and psychological consequences to the animal with the objectives of the proposed investigation. It is the goal of the IACUC to limit the pain and distress of experimental animals to the absolute minimum necessary.

B. RESPONSIBILITIES

- a. It is the responsibility of the Principal Investigator to follow the procedures outlined below regarding pain and distress.
- b. It is the responsibility of the IACUC and the animal care facility personnel to ensure that the proper justification and procedures are followed regarding pain and distress.

C. PROCEDURES

The following information is used by the IACUC in considering painful and stressful procedures, and these guidelines should also be used by those submitting protocols for review. By mutual understanding of terminology, there can be no confusion as to the definitions and standards used by the IACUC in the review process. Animal Care Facility personnel will also follow these same guidelines.

a. PAIN AND DISTRESS: DEFINITIONS

- i. **Pain** is an awareness of acute or chronic discomfort, occurring in varying degrees of severity, and resulting from injury, disease, or emotional distress as evidenced by biological and/or behavioral changes.
- ii. **Acute pain** results from a traumatic, surgical, or infectious event that is abrupt in an onset and relatively short in duration. It is generally alleviated by analgesics.
- iii. **Chronic pain** results from a longstanding physical disorder or emotional distress that is usually slow in onset and has a long duration. It is seldom alleviated by analgesics but frequently responds to tranquilizers combined with environmental manipulation and behavioral conditioning.
- iv. **Distress** is a state in which an animal cannot escape from or adapt to internal stresses which results in effects to the animal’s wellbeing. Its acute form may be relieved by tranquilizers. Sustained distress, however, requires environmental change and behavioral conditioning and does not often respond acceptably to drug therapy.

b. ANALGESICS AND ANESTHESIA: DEFINITIONS

- i. **Analgesia** refers to relief from pain.
- ii. **Tranquilization** is a state of behavioral change in which the patient is relaxed and unconcerned by its surroundings. In this state, the animal is often indifferent to minor pain.
- iii. **Sedation** is a mild degree of central depression in which the patient is awake but calm.
- iv. **Narcosis**, in man, is defined as a drug-produced state of deep sleep accompanied by analgesia. In veterinary medicine, the narcotized patient is seldom asleep but is sedated and oblivious to moderate pain.
- v. **Hypnosis** is a condition of artificially induced sleep, or a trance resembling sleep, resulting from moderate depression of the central nervous system.
- vi. **Local anesthesia** is the loss of sensation in a limited area of the body.
- vii. **Regional anesthesia** is insensibility in a larger but limited area of the body.
- viii. **Basal anesthesia** is a light level of general anesthesia usually produced by pre-anesthetic agents. It serves as a basis for deeper anesthesia on administration of other agents.
- ix. **General anesthesia** is complete unconsciousness.
- x. **Surgical anesthesia** is unconsciousness accompanied by muscular relaxation to such a degree that surgery can be performed painlessly and without struggling on the part of the patient.

c. SIGNS OF PAIN

- i. An animal in pain usually displays one or more of the following signs:
 1. Attraction to the area of pain
 2. Increased skeletal muscle tone
 3. Altered electroencephalogram response
 4. Increased blood pressure and heart rate
 5. Pupillary dilation
 6. Change in the respiratory pattern
- ii. Signs of acute pain:
 1. Protection of the painful part
 2. Vocalization (especially on movement or palpation of the painful part)
 3. Licking
 4. Biting
 5. Scratching or shaking of affected area
 6. Restlessness
 7. Pacing
 8. Increased rate or respiration
- iii. Signs of chronic pain
 1. Limping
 2. Licking of area affected
 3. Licking of other areas if the painful part cannot be reached

4. Reluctance to move
5. Loss of appetite
6. Change in behavior

d. SPECIES SPECIFIC SIGNS OF PAIN

i. Sheep and Goats

1. Sheep and goats in pain often appear dull and depressed with little interest in their surroundings. There is inappetence, weight loss and, in milking sheep and goats, a sudden drop in milk yield.
2. Severe pain often results in rapid, shallow respiration.
3. On handling they may react violently or adopt a rigid posture designed to immobilize the painful region.
4. Grunting and grinding of teeth may be heard.
5. Rigid posture may lead to a lack of grooming because of unwillingness to turn the neck. Changes in posture and movement are apparent and a change in facial expression may be indicative of pain. Goats in particular are more likely to vocalize in response to pain.

ii. Pigs

1. Pigs in pain may show changes in gait and posture.
2. Pigs normally squeal and attempt to escape when handled by these reactions may be accentuated when in pain.
3. Pigs will often be unwilling to move and may hide in bedding, if possible.

iii. Dogs

1. Dogs in pain generally appear quieter and less alert with stiff body movements and an unwillingness to move.
2. In severe pain, the dog may lie still and adopt a crouching attitude. In less severe states, it may appear restless.
3. There may be inappetence, shivering and increased respirations with panting.
4. Spontaneous barking is unlikely; the dog is more likely to whimper or howl, especially if unattended and may growl without apparent provocation.
5. A dog may bite or scratch at painful regions and may become more vicious when handled.

iv. Cats

1. Cats in pain are generally silent, but may growl or hiss if approached.
2. There is inappetence and a tendency to hide.
3. Posture becomes stiff and the cat may sit hunched in sternal recumbency being reluctant to stretch out.
4. A cat in severe pain may howl and show demented behavior with desperate attempts to escape.
5. Incessant licking is sometimes also associated with pain. More usually, the cat has a generally miserable, un-groomed appearance with a change from its normal temperament.
6. There may be panting with an increased pulse rate and dilation of the pupils.

- v. Rabbits
 1. Rabbits in pain may be apprehensive, dull, inactive and assume a “hunched” appearance.
 2. They sometimes, however, show aggressive behavior, and activity may be increased with excessive scratching and licking.
 3. Reactions to handling are exaggerated, and acute pain may result in vocalization.
 4. Respiratory rate may be increased, and there may be inappetence.
- vi. Rodents
 1. Pain in rodents usually results in decreased activity, piloerection and an un-groomed appearance, or there may be excessive licking and scratching.
 2. They may adopt an abnormal stance with ataxia, but rats and mice may become unusually aggressive when handled. Acute pain may cause vocalization.
 3. Inappetence or a change in feeding activity may be noted and, if housed with others, a change in the normal group behavior may be apparent.
- vii. Birds
 1. Birds in pain may show escape reactions with vocalization and excessive movement.
 2. There may be an increase in heart and respiratory rates.
 3. Prolonged pain will result in inappetence and inactivity with a drooping, miserable appearance.
 4. When handled, the escape reaction may be replaced by a state of tonic immobility.
- viii. Fish

It is difficult to determine the nature of the response to pain in fish. Responses to harmful stress include an increased ventilatory pattern with excessive movement of the fins.

D. REFERENCES

- a. [The Guide for the Care and Use of Laboratory Animals \(2011\), National Academies Press, Washington, D.C.](#)
- b. [Animal Welfare Act, Public Law 89-544 as amended; codified at 7 U.S.C. 2131-2159.](#)