附件H 動物疼痛評估及建議用藥

Appendix H Pain and Distress Classifications & Recommendation of Analgesics for Use.

USDA Pain and Distress Classifications and Examples

Classification B: 動物為了進行教學、測試、實驗、研究或手術已被飼養或保定，但尚未進行上述目的者。Animals being bred, conditioned, or held for use in teaching, testing, experiments, research, or surgery, but not yet used for such purposes.

Examples:

- Breeding colonies of any animal species (USDA does not require listing of rats, mice, birds) that are held in legal sized caging and handled in accordance with the *Guide* and other applicable regulations. Breeding colony includes parents and offspring.
- Newly acquired animals that are held in proper caging and handled in accordance with applicable regulations.
- Animals held under proper captive conditions or wild animals that are being observed.

Classification C: 動物進行不致引起疼痛緊迫之教學、測試、實驗、研究或使用減輕疼痛之藥物者。Animals upon which teaching, research, experiments, or tests will be conducted involving no pain, distress, or use of pain-relieving drugs.

Examples:

- Procedures performed correctly by trained personnel such as the administration of electrolytes/fluids, administration of oral medication, blood collection from a common peripheral vein per standard veterinary practice (dog cephalic, cat jugular) or catheterization of same, standard radiography, parenteral injections of non-irritating substances.
- Euthanasia performed in accordance with the recommendations of the most recent AVMA Panel on Euthanasia, utilizing procedures that produce rapid unconsciousness and subsequent humane death.
- Manual restraint that is no longer than would be required for a simple exam; short period of chair restraint for an adapted nonhuman primate.

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Classification D: 動物進行引致疼痛緊迫之教學、測試、實驗、研究或手術且可使用適當之麻醉藥、止痛藥或安神藥者。Animals upon which experiments, teaching, research, surgery, or tests will be conducted involving accompanying pain or distress to the animals and for which appropriate anesthetic, analgesic, or tranquilizing drugs will be used.

Examples:

- Surgical procedures conducted by trained personnel in accordance with standard veterinary practice such as biopsies, gonadectomy, exposure of blood vessels, chronic catheter implantation, laparotomy or laparoscopy.
- Blood collection by more invasive routes such as intracardiac or periorbital collection from species without a true orbital sinus such as rats and guinea pigs.
- Administration of drugs, chemicals, toxins, or organisms that would be expected to produce pain or distress but which will be alleviated by analgesics.

Classification E: 動物進行引致疼痛緊迫之教學、測試、實驗、研究或手術，但因麻醉藥、止痛藥或安神藥的使用會對上述目的之過程結果有負面影響而不能使用者。Animals upon which teaching, experiments, research, surgery, or tests will be conducted involving accompanying pain or distress to the animals and for which the use of appropriate anesthetic, analgesic, or tranquilizing drugs will adversely affect the procedures, results, or interpretation of the teaching, research, experiments, surgery, or tests.

Examples:

- Procedures producing pain or distress unrelieved by analgesics such as toxicity studies, microbial virulence testing, radiation sickness, and research on stress, shock, or pain.
- Surgical and postsurgical sequella from invasion of body cavities, orthopedic procedures, dentistry or other hard or soft tissue damage that produces unrelieved pain or distress.
- Negative conditioning via electric shocks that would cause pain in humans.
- Chairing of nonhuman primates not conditioned to the procedure for the time period used.

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USDA Pain Levels

實驗造成之疼痛及焦慮分級表

等級	等級B Category B	等級C Category C	等級D Category D	等級E Category E
說明	僅繁殖代養無實驗進行	輕微疼痛 不需用藥緩解	明顯疼痛 有用藥緩解	明顯疼痛 無用藥緩解
實例		1. 保定、秤重 2. 注射、採血 3. 打耳號 4. 人道安樂死 5. 不會造成動物生理狀況明顯改變之動物試驗	1. 穿刺採樣 2. 存活與非存活性手術 3. 眼窩採血 4. 食慾喪失 5. 皮膚創傷 6. 結膜炎 7. 角膜水腫 8. 傳染病誘發	1. 毒性試驗、微生物試驗或腫瘤試驗導致動物重病或瀕死 2. 眼睛或皮膚的刺激性試驗導致嚴重臨床症狀 3. 禁水、禁食時間過長 4. 長時間或重複性電擊 5. 燒傷或大規模皮膚創傷 6. 不人道安樂死
規範	無	無	應遵守麻醉及鎮痛藥品使用規範，正確及時投藥	若必需進行此類實驗，應於動物實驗申請書說明原因及試驗終點之判斷

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Recognition of Pain and Distress
辨認疼痛與焦慮

Animals should be monitored for pain and distress as appropriate for the condition, procedure and degree of invasiveness. Critical to the assessment of the presence or absence of pain or distress is having the ability to distinguish between normal and abnormal animal behavior. This is especially true when dealing with rodents that often exhibit pain and distress with only subtle changes in their behavior.
應監控動物的疼痛與焦慮來判定侵擾動物的狀況、程序及程度。相關人員需有能力區別正常與異常的動物行為，來評估動物是否處於疼痛或焦慮。在嚙齒類實驗動物的行為細微變化非常重要，可真實反應出這些動物的疼痛與焦慮。常見的行為變化如下表：

1) Lethargy 不活潑	reluctance to move 活動力降低
2) Abnormal posture 姿勢異常	Hunched 供背
3) Restlessness 躁動	pacing, constant motion 踱步、持續運動
4) Self-mutilation 自殘	licking, biting, scratching, rubbing 舔，咬，抓，摩擦
5) Vocalization 發出叫聲	squeaking when handled 抓取動物時發出叫聲
6) Aggression 出現攻擊性	biting when handled 抓取動物時咬人
7) Guarding 警覺狀	attempting to move away or protect painful area 試圖逃脫或保護疼痛的區域
8) Lack of Grooming 缺乏理毛	ruffled or greasy fur coat 毛髮粗鋼或油膩
9) Red staining of face 顏面色染	red discharge from eyes or nose (rats) 眼鼻出現紅色分泌物(大鼠)
10) Poor appetite 食慾差	
11) Weight loss 體重降低	loss of >10% of pre-operative body weight 與術前相較，體重降低 10%以上

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Recommendation of Analgesics for Use in Small Mammals and Larger Animals

Analgesic	Mouse	Rat	Rabbit	Dog	Pig	Cat
Opioids						
Buprenorphine	0.1 mg/kg SC	0.05 mg/kg SC	0.01-0.05 mg/kg SC	0.005-0.02 mg/kg IM SC or IV every 6-12 hours	0.005-0.02 mg/kg IM or IV every 6-12 hours	0.005-0.0 mg/kg IM SC or IV every 6-1 hours
Butorphanol	1-5mg/kg SC	2 mg/kg SC	0.1-0.5 mg/kg SC	0.2-0.4 mg/kg SC or IM, every 3-4 hours	unknown	0.4 mg/k SC, every 3-4 hour
Morphine	2-5 mg/kg SC or IM every 4 hours	2-5 mg/kg SC or IM every 4 hours	2-5 mg/kg SC or IM every 4 hours	0.5-5 mg/kg IM, every 4 hours	0.2-1 mg/kg IM, every 4 hours	0.1 mg/k IM, every 4 hours
Pethidine	10-20 mg/kg SC or IM every 2-3 hours	10-20 mg/kg SC or IM every 2-3 hours	10 mg/kg SC or IM every 2-3 hours	10 mg/kg IM or IV every 2-4 hours	2 mg/kg IM or IV every 2-4 hours	2-10 mg/kg IM or IV every 2- hours
NSAIDs						
Ibuprofen	30 mg/kg PO, SID	15 mg/kg PO, SID	unknown	unknown	unknown	Not recomme ded
Carprofen	5 mg/kg SC, BID	5 mg/kg SC, BID	1.5 mg/kg daily, 4 mg/kg SC daily	4 mg/kg SC or IV, SID	2-4 mg/kg SC or IV, once daily (probably 2-3 days)	4 mg/kg SC or IV (once)
Ketoprofen	unknown	5 mg/kg IM	3mg/kg IM	2 mg/kg SC daily (up to 3 days)	3 mg/kg SC (once)	2 mg/kg SC daily (up to 3 days)
Flunixin	2.5 mg/kg SC, BID	2.5 mg/kg SC, BID	1.1mg/kg SC, BID	1mg/kg IV or IM every 12 hours (up to 3 days)	1 mg/kg IV or SC, SID	1mg/kg SC (once

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Meloxicam	unknown	1.0-2.0 mg/kg SC, SID	0.2mg/kg SC, SID	0.2 mg/kg SC, SID	0.4 mg/kg once daily IM (for 2 days)	0.3 mg/k SC
Acetaminophen	Not recommended	Not recommended	100-300 mg/kg every 4 hours, or 1-2 mg/ml drinking water	5-15 mg/kg BID to TID	unknown	Not recomme ded
Analgesic	**Mouse**	**Rat**	**Rabbit**	**Dog**	**Pig**	**Cat**

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