

# FISH, AQUATIC AMPHIBIAN, AND REPTILE ANALGESIA

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## 1. PURPOSE

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The intent of this Standard Operating Procedure (SOP) is to describe methods of assessing pain in fish, aquatic amphibians and reptiles, and mitigating pain by administration of analgesic medications.

## 2. RESPONSIBILITY

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Principal investigator (PI) and their research staff, veterinary care staff.

## 3. GENERAL CONSIDERATIONS

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- 3.1. A procedure which would be expected to be painful if it were done on humans must be considered painful to the animal.
- 3.2. When there is a question of whether or not a procedure is painful, the animal should receive the benefit of analgesia.
- 3.3. Analgesia should be provided at an appropriate dose and frequency to control pain.
- 3.4. Any deviation from this procedure must be justified by the investigator and approved by the appropriate Facility Animal Care Committee (FACC).

## 4. PAIN RECOGNITION AND ASSESSMENT

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- 4.1. Adapt the frequency of observation to the invasiveness of the procedure (minimum once a day).
- 4.2. Start by observing the animal from a distance so the animal's behavior is not altered by the presence of the observer. Then proceed to observe the animal more closely.
- 4.3. Look for any changes in the behavior. Report animals which appear to be in pain to the veterinary care staff.  
**Note:** The most reliable signs of pain and distress are the changes in behavior. This implies a good knowledge of species and individual normal behavior by the observer.
- 4.4. Fish, amphibians, and reptiles do not exhibit obvious clinical signs of pain. Because fish and amphibians can experience pain as mammals do, the assumption is made by extrapolation from human observation.

## 5. ANALGESIA PLAN

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- 5.1. If possible, provide analgesia before the painful stimulus, as it is more effective in preventing pain (e.g. give analgesic before surgery).

Analgesic	Dose	Route	Duration	Note
Lidocaine	< 2 mg/kg	SC, Infiltration of surgical wounds	30–60 min.	Use lidocaine HCl 2% (20mg/ml) injectable solution. Because this drug is acidic, it is recommended to dilute it 3:1 with sodium bicarbonate injectable solution (at 5 or 8.4%)  Dilution must be prepared immediately before use and should not be stored. Diluted solution is as effective but induction of analgesia is slightly prolonged.  *Dilution with sodium bicarbonate is not necessary if lidocaine is to be administered to an anesthetized animal.
Bupivacaine	< 2 mg/kg	SC, Infiltration of surgical wounds	3–4 hr.	Use bupivacaine HCl 0.50% (5mg/ml) injectable solution.  Same comment as for lidocaine.
* Lidocaine bupivacaine mixture	< 2 mg/kg	SC, Infiltration of surgical wounds	30 min. to 4 hrs.	Same comment as for lidocaine.  Combining both drugs allows for rapid induction and prolonged effect.  Use a 1:1 mixture of lidocaine HCl 2% (20mg/ml) injectable solution and bupivacaine HCl 0.50% (5mg/ml) injectable solution.  Discard mixture after 3 months.
Lidocaine or benzocaine - (Orajel) gel	-	Topical	30–60 min.	For fish and amphibians only.  Apply a thin layer over the affected area

\* most commonly used

## 7. GENERAL ANALGESIA

Fish

Analgesic	Dose	Route
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7.1. Administration of non-steroidal anti-inflammatory drugs (NSAIDs):

7.1.1. NSAIDs include carprofen, ketoprofen and meloxicam.

7.1.2. To minimize chances for adverse drug interactions, a washout period of 5-7 days is recommended before switching between NSAIDs.

## 8. SAFETY PRACTICES

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8.1. MS-222:

8.1.1. Wear protective clothing, gloves, and eye protection when handling the MS-222 powder.

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## SOP REVISION HISTORY

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