



OFFICE OF LABORATORY ANIMAL CARE

# Operating Guidelines

OG Number:	306	<b>Chemical Immobilization of Nonhuman Primates</b>	Revision #:	0
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## Procedures

### 1. Agents:

- Ketamine (HCl): 100mg/ml, typically supplied in 10ml multi-use vials
- +/- Midazolam: 5mg/ml, supplied in 10ml multi-use vial
- +/- Dexmedetomidine: 0.5mg/ml, supplied in 10ml multi-use vial
- +/- Atipamezole/ Antisedan (or Revetidine): 5 mg/ml, supplied in 10ml multi-use vial

### 2. Dosage (Intramuscular route):

- Ketamine HCl: 2-10 mg/kg
- Midazolam: 0.25 mg/kg
- Dexmedetomidine: 0.015-0.04 mg/kg
- Atipamezole/ Antisedan (or Revetidine) 0.1-0.4mg/kg (**guideline:** use the same volume as dexmedetomidine)

### 3. Administration:

- Determine chemical immobilization drug protocol.
  - Note that intramuscular administration is preferred for NHPs unless directed otherwise by a veterinarian.
  - Dosages for IV administration are typically lower than IM due to faster drug uptake.
- Calculate dosage for immobilization using the most recent body weight available.
  - Estimate body weight if the current body weight has not been determined recently.

- Record updated weight once sedated.
- c. Prior to drug administration:
  - Notify the veterinarian overseeing the sedation to provide an opportunity for consolidation of procedures performed under chemical restraint (e.g., sample collections, treatments).
  - This step promotes efficient case management and may reduce the number of sedations performed on an animal.
- d. Fast the NHP(s) according to the below steps:
  - If possible, fasting should be performed approximately 12 hours prior to the administration of chemical immobilizing agents.
    - If this is not possible, remove all food from the NHP's cheek pouches once the NHP is sedated to minimize the risk of aspiration.
  - Fill out a fasting sign and post outside of the NHP(s) room.
  - Attach a yellow cage tag to the cage, indicating fasting by vet staff.
  - Remove all biscuits from the animal's enclosure.
- e. Separate NHP(s) that are social/full pairs or are grooming contact pairs with a solid divider slide prior to sedation.
  - Leave the solid divider slide in place until the sedated animal(s) has fully recovered from sedation.
  - Attach a red cage tag to the cage, indicating the veterinary staff has separated these animals and the cage should remain in this configuration.
- f. Administer chemical immobilization drugs as determined in steps 3a and 3b.
- g. Unless otherwise required for experimental reasons, administer ophthalmic ointment to both eyes to prevent corneal desiccation.
- h. If available, or as described according to protocol, begin patient monitoring.
  - For example, a pulse-oximetry device may be used to monitor heart rate and SpO2 levels throughout chemical immobilization.
- i. Depending on the agent used, route of administration, and animal related factors, animals should remain immobilized for 5 to 30 minutes using a single dose of Ketamine HCl.
  - If the procedures requiring immobilization outlast the effect of the chemical agent, supplemental injections or use of inhaled isoflurane may be administered to prolong immobilization or sedation.
  - Supplemental isoflurane may be administered to effect via mask, typically at 1-3% isoflurane and 1.5L/min oxygen.
  - Supplemental Ketamine (HCl) may be administered IM or IV, typically at half the original dose.

#### 4. Recovery:

- Upon returning sedated NHP to its housing room, reverse Dexmedetomidine (if administered) with Atipamezole IM in an equal volume as the Dexmedetomidine that was administered for sedation.
- Place NHP in its home enclosure, draped over the perch. If necessary, the patient may be gently stimulated manually (eg, rocking patient from side to side, pinching a toe, prodding gently).

- Once movement or blinking is detected, remove any monitoring equipment attached to the patient and secure the enclosure.
- Remain in the NHP housing area to monitor the NHP until fully upright in enclosure and able to move around and/or eating normally.
- Do not allow grooming access with cage mate(s) until fully ambulatory.
- Assess for vertical access within the cage by removing one of the horizontal dividers first, while still separated from cage mate(s).
- If NHP is deemed fully recovered from sedation, re-pair with their cage mate(s) and remove the red tag from the cage.
- Remove the fasting door sign and yellow cage tag once NHP is awake.

5. Record Keeping:

- a. Record all doses administered in the NHP's medical record, or in the anesthetic record, as appropriate.
- b. Ketamine and Midazolam are controlled substances and must be logged additionally within their corresponding Controlled Substance Log Books.

REVISION HISTORY			
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