1. PURPOSE

This Standard Operating Procedure (SOP) describes methods for anesthetizing birds.

2. RESPONSIBILITY

Principal investigator (PI) and their research staff.

3. GENERAL CONSIDERATIONS

3.1. The fasting period for birds depends on the size of the birds. The fasting period for small birds (under 30gr) is up to 2 hours.

3.2. Birds can be anesthetized with either inhalant gas or injectable drugs. The use of inhalant gases is the method of choice whenever possible.

3.3. Heat loss is rapid in anesthetized birds. Keep animals warm by covering them with a gauze pad or towel or providing a heat source until the animal has recovered from anesthesia. Care should be taken not to overheat or burn the animal; do not place animals directly in contact with the heat source; use a drape or other material as a barrier.

3.4. Never leave an anesthetized animal unattended.

4. MATERIALS

4.1. Material or equipment to provide or conserve body heat, e.g., gauze pads, towels, heating pads, jackets, or heat lamps. If using a heat lamp, use 60W bulbs or less.

4.2. Ophthalmic ointment (natural tears)

4.3. Gas anesthesia machine, with adequate gas scavenging system or filter.

4.4. Induction chamber constructed of a see-through material (glass, polycarbonate, etc.)

4.5. Tight-fitting mask or orotracheal tube

4.6. Isoflurane

4.7. Ketamine (100mg/mL) *Controlled drug

4.8. Xylazine (20mg/mL)

4.9. Midazolam (5mg/mL)

4.10. Atropine (0.5mg/mL)
5. PROCEDURE

5.1. As a pre-anesthetic, atropine 0.01mg/kg can be administered to prevent secretions.

5.2. Isoflurane anesthesia:

5.2.1. Induction:
   5.2.1.1. Place the mask, connected to the Bain circuit, over the beak of the animal.
   5.2.1.2. Adjust the oxygen flowmeter to 0.5 to 2.5 L/min.
   5.2.1.3. Adjust the isoflurane vaporizer to 3% to 5% until loss of consciousness.

5.2.2. Maintenance:
   5.2.2.1. Adjust the flowmeter to 0.5 to 2.5 L/min.
   5.2.2.2. Adjust the isoflurane vaporizer to 0.5 to 2 % (dose to effect).
   5.2.2.3. Apply ophthalmic ointment (natural tears) to both eyes to prevent dryness and damage to the cornea. Reapply as needed.

5.2.3. Recovery:
   5.2.3.1. Turn off the isoflurane vaporizer, flush the system, and keep the animal on oxygen.
   5.2.3.2. Transfer the animal to its cage once it begins to move and allow it to recover fully (sternal position).

5.3. Injectable anesthesia:

5.3.1. The injectable anesthetic dose can vary with the sex, age, strain, and body condition of the animal.

5.3.2. It can be used alone for short, non-invasive procedures or before using isoflurane anesthesia for smooth and rapid induction.

5.3.3. Contact the veterinarian staff on the appropriate dose before use.

5.3.4. After injection, place the animal in a dark, quiet holding chamber with a heat source.

5.3.5. Apply ophthalmic ointment (natural tears) to both eyes to prevent dryness and damage to the cornea. Reapply as needed.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Route</th>
<th>Duration of Effect</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ketamine</td>
<td>10- 40mg/kg</td>
<td>IM</td>
<td>15 to 30 minutes</td>
<td></td>
</tr>
<tr>
<td>Ketamine</td>
<td>10- 40mg/kg,</td>
<td>IM</td>
<td>30 minutes to 1 hour</td>
<td>It can be mixed in the same syringe.</td>
</tr>
<tr>
<td>Midazolam</td>
<td>0.5- 2mg/kg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ketamine</td>
<td>25- 40mg/kg</td>
<td>IM</td>
<td>1 to 2 hours</td>
<td>It can be mixed in the same syringe. After 30 minutes, a half dose may be administered as needed.</td>
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<tr>
<td>Xylazine</td>
<td>5- 50mg/kg</td>
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