Guidelines and Recommended Best Practices for Anesthesia/Analgesia - Mice

Note that all of these doses are approximations and must be titrated to the animal’s strain, age, sex and individual responses. Significant departures from these doses should be discussed with a veterinarian. Doses will also vary depending on what other drugs are being administered concurrently.

All doses are listed as milligrams per kilogram (mg/kg) unless otherwise noted. Dilution of injected drugs allows more precise dosing, but may shorten the shelf-life of the compound (diluted drugs should be labeled, then discarded after 1 month) source: UCSF

<table>
<thead>
<tr>
<th>DRUG NAME</th>
<th>DOSE (mg/kg) &amp; ROUTE</th>
<th>FREQUENCY</th>
<th>NOTES</th>
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</thead>
<tbody>
<tr>
<td><strong>Inhalation anesthetics</strong></td>
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<tr>
<td>Recommended: Isoflurane</td>
<td>1-3% inhalant to effect (up to 5% for induction)</td>
<td>Whenever general anesthesia is required</td>
<td>Survival surgery should have concurrent preemptive analgesia. Use precision vaporizer</td>
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<td><strong>Ketamine combinations</strong></td>
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<tr>
<td>Ketamine-Medetomidine</td>
<td>50-75 + 0.5-1 IP (in same syringe)</td>
<td>As needed</td>
<td>May not produce surgical-plane anesthesia for major procedures. If redosing, use ketamine alone. May be partially reversed with Atipamezole</td>
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<tr>
<td>Recommended: Ketamine-Xylazine</td>
<td>80-100 + 5-10 IP (in same syringe)</td>
<td>As needed</td>
<td>May not produce surgical-plane anesthesia for major procedures. If redosing, use ketamine alone. May be partially reversed with Atipamezole or Yohimbine</td>
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<tr>
<td>Ketamine-Xylazine-Acepromazine</td>
<td>30-40 + ~ 6 + ~1 (in same syringe)</td>
<td>As needed</td>
<td>May not produce surgical-plane anesthesia for major procedures. If redosing, use ketamine alone. May be partially reversed with Atipamezole or Yohimbine</td>
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<td><strong>Reversal agents</strong></td>
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<tr>
<td>Atipamezole</td>
<td>0.1 - 1.0 subcutaneous or IP</td>
<td>Any time medetomidine or xylazine has been used</td>
<td>More specific for medetomidine than for xylazine (as a general rule, Atipamezole is dosed at the same volume as Medetomidine, though</td>
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### ANESTHESIA/ANALGESIA - MICE

**Yohimbine**
- **1.0 - 2.0 SC or IP**
- For reversal of xylazine effects

**Other injectable anesthetics**
- **Nembutal**
  - **40 - 50 IP**
  - Best for terminal/acute procedures, with booster doses as needed
  - Consider supplemental analgesia (opioid or NSAID) for invasive procedures

### Opioid analgesia

**Recommended:** Buprenorphine
- **0.05 - 0.1 SC or IP**
- Used pre-operatively for preemptive analgesia and post-operatively every 6-12 hours
- For major procedures, require more frequent dosing than 12 hour intervals. Consider multimodal analgesia with a NSAID.

### Non-steroidal anti-inflammatory analgesia (NSAID) - Note that prolonged use may cause renal, gastrointestinal, or other problems

**Recommended:** Carprofen
- **4 - 5 SC**
- Oral – BioServ Rimadyl one tablet 5g/day
- Used pre-operatively for preemptive analgesia and post-operatively every 12-24 hours
- Depending on the procedure, may be used as sole analgesic, or as multimodal analgesia with buprenorphine

**Recommended:** Meloxicam
- **~ 0.2 PO, IM or SC**
- Used pre-operatively for preemptive analgesia and post-operatively every 12-24 hours
- Depending on the procedure, may be used as sole analgesic, or as multimodal analgesia with buprenorphine

**Recommended:** Ketoprofen
- **2 - 5 SC**
- Used pre-operatively for preemptive analgesia and post-operatively every 12-24 hours
- Depending on the procedure, may be used as sole analgesic, or as multimodal analgesia with buprenorphine

**Flunixin meglumine**
- **~ 2 SC**
- Used pre-operatively for preemptive analgesia and post-operatively every 12-24 hours
- Depending on the procedure, may be used as sole analgesic, or as multimodal analgesia with buprenorphine

**Local anesthetic/analgesics (lidocaine and bupivicaine may be combined in one syringe for rapid onset and long duration analgesia)**

- **Lidocaine hydrochloride**
  - Dilute to 0.5%, do not exceed 7 mg/kg total dose, SC or intra-incisional
  - Use locally before making surgical incision
  - Faster onset than bupivicaine but short (<1 hour) duration of action

- **Bupivicaine**
  - Dilute to 0.25%, do not exceed 8 mg/kg total dose, SC or intra-incisional
  - Use locally before making surgical incision
  - Slower onset than lidocaine but longer (~ 4-8 hour) duration of action