

### SOP: Analgesics Recommended to Reduce Pain and Distress in Mice and Rats

<b>Objective:</b>	To provide guidance on appropriate analgesia in rodents
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- Analgesia choices should be made based on the type of procedure, the animal model, and the scientific needs of the experiment.
  - As invasiveness increases, the pain expected will increase and analgesia choices should reflect this.
  - There are variations in pain response based on age, sex, strain, species, and individual.
  - Multi-modal analgesia (using analgesics from different drug classes) is preferred for moderately to severely painful procedures
- Pre-emptive analgesia is preferred
  - **BUPRENORPHINE** should be given 30 minutes prior to recovery from anesthesia to ensure analgesia is present at time of anesthetic recovery.
  - **CARPROFEN** should be given 1-2 hours prior to survival surgery to ensure analgesia is present at time of anesthetic recovery.
- The administration of analgesia does not negate the need for careful monitoring. If animals are found to be in pain despite the provision of protocol approved analgesics, the vivarium team must be contacted in order to adjust the pain control regiment.

The tables below are a recommended starting point.

#### Mouse Analgesic Recommendations

Class	Agent	Dose (mg/kg)	Route	Frequency	Notes
Opioid	Buprenorphine HCl	0.05	SC	6h	
Opioid	Buprenorphine-SR	0.6-1.2	SC	48-72h	No dilutions, SC dosing only
Opioid	Ethiqx XR	3.25	SC	48-72h	No dilutions, SC dosing only
NSAID	Carprofen	2.5-5	SC	24h	
NSAID	Flunixin meglumine	2.5	SC	12-24h	
NSAID	Meloxicam	5-20*	SC	24h	*high doses may cause gastric ulcers
NSAID	Meloxicam-SR	Not recommended	Consult AV	Consult AV	Incision site reactions
Local	Lidocaine 0.5%	Up to 6	Local infiltration	Before incision or during closure	Lasts approximately 1 hour

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Local	Bupivacaine 0.25%	Up to 8	Local infiltration	Before incision or during closure	20-30 minutes to take effect, lasts approximately 4-8 hours
Local	Lidocaine 0.5%/ Bupivacaine 0.25% combination	See above	Local infiltration	Before incision or during closure	
Local	Lidocaine 2.5%/ prilocaine 2.5% cream	2.5% + 2.5%	Topical	Once	Placed on ear bars for stereotaxic surgery
Local	Liposomal bupivacaine	1	Local infiltration	Before incision or during closure	

**Rat Analgesia Recommendations**

Class	Agent	Dose (mg/kg)	Route	Frequency	Notes
Opioid	Buprenorphine HCl	0.05	SC	6h-8h	
Opioid	Buprenorphine-SR	0.3-1.2	SC	48-72h	No dilutions, SC dosing only
Opioid	Ethiqa XR	0.65	SC	48-72h	No dilutions, SC dosing only
NSAID	Carprofen	2.5-5	SC	24h	
NSAID	Ketoprofen	5	SC	24h	
NSAID	Meloxicam	1-2	SC	24h	
NSAID	Meloxicam-SR	4	SC	72h	
Local	Lidocaine 0.5%	Up to 6	Local infiltration	Before incision or during closure	Lasts approximately 1 hour
Local	Bupivacaine 0.25%	Up to 8	Local infiltration	Before incision or during closure	20-30 minutes to take effect, lasts approximately 4-8 hours
Local	Lidocaine 0.5%/ Bupivacaine 0.25% combination	See above	Local infiltration	Before incision or during closure	
Local	Lidocaine 2.5%/ prilocaine 2.5% cream	2.5% + 2.5%	Topical	Once	Placed on ear bars for stereotaxic surgery
Local	Liposomal bupivacaine	1	Local infiltration	Before incision or during closure	

**Revision History**

Re-approved May 19, 2014; July 20, 2017; June 19, 2020  
 Administrative changes September 16, 2022  
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