



# Curtin University Standard Operating Procedure

## GENERAL ANAESTHESIA OF GUINEA PIGS

Number: TEC 17

Version: 1.1

Date: 12/06/2014

**Purpose:** To provide guidelines for the anaesthesia of Guinea Pigs for research projects in Building 300 at Curtin University. It may be required for both invasive and non-invasive procedures and must always be approved by the Animal Ethics Committee (AEC).

### Definitions:

#### General Anaesthesia:

- Involves the loss of consciousness, loss of sensation, and muscle relaxation. Depending on the procedure to be performed, the level of anaesthesia can vary. It does not necessarily mean that a loss of consciousness equates with analgesia, with noxious stimuli still being able to be transmitted to, and processed by, the central nervous system.
- Can be provided by inhalational gases or vapours, or by an injection of an anaesthetic drug or mixture of agents.

Premedication: depending on the procedure to be done, and the anaesthetic agents to be used, premedication is used in some situations to provide analgesia during the procedure; reduce stress prior to the procedure; and to reduce the side effects of the anaesthetic agent used.

Intraperitoneal (IP) – is the injection of a substance into the abdominal cavity of the animal to be absorbed rapidly by the peritoneal lining into the animal's blood stream.

Subcutaneous (SC) – is the injection of a substance under the skin of the animal into the Metedomidine – a newer alpha2 agonist analgesic drug closely related to xylazine.

Ketamine - rapid-acting, non-narcotic, non-barbiturate agent used as a dissociative anaesthetic, and commonly used in combination with other drugs to produce general anaesthesia. It is an S8 drug which is strictly regulated.

#### Scheduled Drugs - Use of schedule 4-8 drugs

- a. Anaesthetic drugs are supplied by prescription under a veterinary licence or research permit.
- b. Storage- Schedule 8 drugs, which include the opiates and ketamine, should be stored in a locked safe with restricted access.



- c. Dispensing records for these drugs are made in a bound book. For therapeutic use (including anaesthesia) they should only be issued under the direction of a veterinarian. See SOP TEC 09.

## Procedures:

1. There is no requirement for guinea pigs to be fasted prior to the anaesthetic so ensure free access to food and water prior to induction of the anaesthetic.
2. A thorough pre anaesthetic examination should be carried out to ensure the animal is healthy enough to undergo the following procedure. This should include:
  - a. Current weight
  - b. Body condition, demeanour, activity levels, and respiratory pattern
3. Induction and maintenance of the anaesthetic. Can use either
  - a. Injectable Anaesthetics
    - i. Ketamine 40mg/kg IP with medetomidine 0.5mg/kg IP
      1. 0.4ml (40mg) of ketamine + 0.5ml (0.5mg) medetomidine + 1.1ml water for injection can be administered at the dose rate of 2ml/kg.
      2. It may be necessary to administer an additional 25 % of the original dose if the animal is not adequately anaesthetised.
    - ii. Inhalational anaesthetic induction:
      - i. Isoflurane 4-5% in 100% oxygen at a flow rate of 4L/min into an induction chamber – [present in the facility]
      - ii. Maintenance at 1-3% in 100% oxygen at a flow rate of 2L/min via a firmly fitting face mask.  
\*\* This may need to be higher if not premedicated and needs to be adjusted.
  - b. Inhalational anaesthetic induction:
    - i. Isoflurane 4-5% in 100% oxygen at a flow rate of 4L/min into an induction chamber – [present in the facility]
    - ii. Maintenance at 1-3% in 100% oxygen at a flow rate of 2L/min via a firmly fitting face mask.  
\*\* This may need to be higher if not premedicated and needs to be adjusted.
4. Monitoring anaesthesia:
  - All animals must have a record kept by the researcher if the duration is longer than 10 minutes
  - Anaesthetic record sheets can be obtained from the Animal Welfare Officer or Form 10
  - Ensure the guinea pig is kept warm during the procedure e.g. use a heat source to minimise hypothermia.
5. Analgesia must be administered as approved for the individual procedure by the AEC. Guinea pigs have a low pain threshold.
6. Post-procedural monitoring
  - a. The animal should be observed continuously until the righting reflex has returned by the researcher or an assistant. Animals should be returned to



a warm, draft-free cage that is placed on a warming pad or under a heat lamp. Animals at different stages of recovery should not be put together as more awake animals are likely to trample others. However return to social housing as soon as possible.

- b. If surgery has been performed the bedding substrate should not be able to stick to the wound e.g. use paper rather than wood shavings as bedding.
- c. Ensure that the animal is able to reach water and food sources. If not then place these on the cage floor or consider administering fluids to prevent dehydration. Hydrating gels are also commercially available and are very useful in the post-operative period. Dehydration can be monitored by persistence of a skin tent.
- d. Monitor the animals' basic biological functions (food/water intake, bodyweight, urination) as well as any clinical signs of distress daily for at least the first week following surgery. If surgery has been performed, an analgesic plan should have been devised and this should be followed and recorded. Post-op care sheets are very useful for recording such information and should be used wherever possible (see Form 8).

**References:**

National Health and Medical Research Council 2013, Australian Code for the Care and Use of Animals for Scientific Purposes, 8<sup>th</sup> edition, Australian Government, Australia

Flecknell, P 2009, Laboratory Animal Anaesthesia, 3<sup>rd</sup> edition, Academic Print, USA

National Research Council 2011, Guide for the Care and Use of Laboratory Animals, 8<sup>th</sup> Edition, National Academy of Sciences, USA

NHMRC 2008 Guidelines to Promote the Wellbeing of Animals used for Scientific Purposes (<http://www.nhmrc.gov.au/guidelines/publications/ea18>)

**UWA Standard Operating Procedure on Anaesthesia for Guinea Pigs**

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