

## Refinements in telemetry:

### the seventh report of the [BVA\(AWF\)/FRAME/RSPCA/UFAW Joint Working Group on Refinement](#)

This report addresses refinements in telemetry, i.e. the use of internally or externally mounted devices for transmitting or storing (logging) physiological data from experimental animals in the laboratory and in the field. Telemetry is widely viewed as benefiting science and animal welfare because it can reduce stress caused to animals (e.g. by restraint), enable reductions in animal numbers, and provide indicators of animal wellbeing to help implement humane endpoints. However, the use of telemetry does not represent a true refinement – for either welfare or science – unless due regard is paid to the impact that it has on individual animals.

The report therefore aims to assist scientists, animal technicians, veterinarians and members of ethics or animal care and use committees to identify potential areas of suffering within telemetry projects and take positive steps to prevent or minimise them. It is published in *Laboratory Animals* in two parts; A (procedures) and B (husbandry).



#### Part A: Refinements in telemetry procedures

Morton DB, Hawkins P, Bevan R, Heath K, Kirkwood J, Pearce P, Scott E, Whelan G, Webb A (2003) *Laboratory Animals* **37**, 261-299

Part A addresses refinements in telemetry procedures, from the project planning stage through to reporting finished research. It sets out good practice and makes recommendations on:

- harms and benefits associated with telemetry; making decisions on the justification for individual projects
- experimental design – data sampling and physical arrangement of hardware
- choosing or designing a device, including the potential device impact due to mass, shape and dimensions
- deciding whether to use total implants, externally attached devices or internal devices with exterior components such as skin buttons
- refinements in surgical implantation, including training, anaesthesia, pain management and postoperative care
- re-use of animals
- removing implanted devices and the potential for rehoming or releasing animals
- wild animal use in telemetry studies, including field studies
- good practice in writing up studies involving telemetry
- keeping informed about new technological developments

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## Part B: Husbandry refinements for rats, mice, dogs and non-human primates used in telemetry procedures

Hawkins P, Morton DB, Bevan R, Heath K, Kirkwood J, Pearce P, Scott E, Whelan G, Webb A (2004) *Laboratory Animals* **38**, 1-10

Part B complements existing literature on the refinement of laboratory animal housing and care by assessing the implications of telemetry for rat, mouse, dog and non-human primate husbandry.

From the animals' point of view, an ideal telemetry system would allow them to be housed in stable, compatible groups, be minimally invasive and would not be interfered with by conspecifics. In practice, however, both internally and externally mounted devices can facilitate and preclude social housing in different ways. The report explains how obstacles to group housing can be overcome when using different systems and provides guidance on:

- selecting suitable individuals for telemetry studies, with respect to both health and temperament
- habituating animals to experimental conditions
- safely re-establishing groups following surgery
- setting limits on long-term housing

It also includes 'check lists' setting out the basic requirements of rats, mice, dogs and primates, with an Appendix that lists resources and references on husbandry refinements to help fulfil these requirements.

▶ [Link to: Contents](#)



## Online resources

There are also online resources to accompany parts A and B, which address:

- [Guidance notes for producing project proposals involving biotelemetry or data logging](#) - these aim to facilitate improvements in science and animal welfare and to ensure more effective communication between all those involved in regulating animal use, planning projects, and caring for and using research animals.
- [Legal issues](#) associated with the use of animals in biotelemetry studies: (1) laws regulating the use of animals in scientific procedures; (2) laws regulating field studies on animals, including releasing them; and (3) regulations applying to the use of electronic equipment and radio frequency emissions.
- [Writing up telemetry studies](#) for publication: how the recommendations in Parts A and B of the report can be implemented and written up so as to promote and disseminate good practice.



For further information about the series of [Joint Working Group on Refinement reports](#), please contact the RSPCA Research Animals Department ([Research\\_Animals@rspca.org.uk](mailto:Research_Animals@rspca.org.uk)).



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#### References

**Appendix** Selected useful information



## **Husbandry refinements for rats, mice, dogs and non-human primates used in telemetry procedures: contents**

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#### References

**Appendix** Husbandry refinements for laboratory rodents, dogs and primates



Last updated: April 2005

The Joint Working Group on Refinement was established by the British Veterinary Association Animal Welfare Foundation (BVAAWF), the Fund for the Replacement of Animals in Medical Experiments (FRAME), the Royal Society for the Prevention of Cruelty to Animals (RSPCA\*) and the Universities Federation for Animal Welfare (UFAW), under the chairmanship of David Morton and with a secretariat provided by the RSPCA. The Group aims to minimise laboratory animal suffering and improve welfare by ensuring that up-to-date information is readily available on the refinement of both experimental procedures and laboratory animal husbandry. The full list of Joint Working Group on Refinement reports is as follows (for reprints, contact [Research\\_Animals@rspca.org.uk](mailto:Research_Animals@rspca.org.uk)):

- 1**     [Removal of blood from laboratory mammals and birds](#)  
*Laboratory Animals* (1993) **27**, 1-22
- 2**     [Refinements in rabbit husbandry](#) *Laboratory Animals* (1993) **27**,  
301-329
- 3**     [Refinements in mouse husbandry](#) *Laboratory Animals* (1998) **32**,  
233-259
- 4**     [Refining procedures for the administration of substances](#)  
*Laboratory Animals* (2001) **35**, 1-42
- 5**     [Refinements in husbandry and procedures for laboratory birds](#)  
*Laboratory Animals* (2001) **35** Suppl. 1, 1-163
- 6**     [Reduction and refinement in the generation, management and care of genetically modified mice](#) *Laboratory Animals* (2003) **37**  
Supplement 1, 1-51
- 7A**    **Refinements in telemetry procedures** *Laboratory Animals* (2003)  
**37**, 261-299
- 7B**    **Husbandry refinements for rats, mice, dogs and non-human primates used in telemetry procedures** *Laboratory Animals* (2004)  
**38**, 1-10
- 8**     **Refining dog husbandry and care** *Laboratory Animals* (2004) **38**  
Suppl. 1, 1-94

\*The RSPCA is opposed to experiments that cause pain, suffering, distress or lasting harm, but all members of the Working Group share the common aim of replacing animal experiments wherever possible, reducing suffering and improving welfare while animal use continues.