

Recommendations for refining rodent head fixation and fluid control

This summary presents the main recommendations from [a review](#) of the use of head fixation and fluid control in rodents. These recommendations are the product of an [NC3Rs working group](#) and you can find further material on this topic at the dedicated [resource page](#).

This summary is intended for animal care staff involved in the care of animals involved in the use of these techniques. Summaries for researchers and members of ethical review bodies are also available on the [resource page](#).

The recommendations are split into two categories; [head fixation surgery](#) and [dietary control](#). The other summary sheets also detail some recommendations for [behavioural set-up](#). Links to sections of the paper and to other useful material are given where relevant for further information.

Head fixation surgery – preparation and conversation are key

1. [Pre-surgical steps](#) are key to a successful outcome, including preparations for post-operative recovery. This may involve preparing items such as medicated jelly to provide analgesia to the animals. Discuss with researchers what is expected and what to monitor in post-surgical animals, including frequency of monitoring and intervention points.
2. The site of surgery and general health of the animal should be [monitored](#) closely in the days following the procedure, observations recorded and reviewed so that appropriate action can be promptly taken. Ideally researchers should involve animal care staff in these assessments, see [example health monitoring templates](#) for key indicators of recovery, including body weight, integrity of the wound site and general activity level of the animal.
3. Discuss long-term housing arrangements for animals under study as group housing of animals with head implants is strongly recommended to avoid the negative welfare impacts of single housing. [Group housing has not been observed to lead to greater post-surgical complications or implant loss.](#)

Dietary control – regular monitoring to maintain animal condition

4. The overall [welfare](#) of each animal must be monitored and recorded daily and compared against clearly defined intervention points to avoid unnecessary suffering. Discuss these measures and appropriate responses with the researchers and ensure that when action needs to be taken and what these actions are is clear. For example, see the [example health monitoring templates](#) for key welfare measures, including body weight, grooming and general activity level of the animal.
5. It is important to ensure that all animals are able to consume the food and water they need every day during the study, but dominance hierarchies in the cage can complicate this and animals may compete for food and/or water access. It is important to keep an eye on this. If necessary, separating an animal for a short period to feed and/or drink can address situations in which an individual rodent continues to lose weight while others in the cage remain stable, but the time apart should be minimised.
6. Responses to dietary control may differ in mutant rodent lines compared to their wildtype counterparts, so extra monitoring may be required when first using it in a novel line. Ask researchers at the start of the study if this is a new line and/or if any additional monitoring is required.