

# Discussion paper: reducing severe suffering

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*Report of a workshop held at the Institute of Animal Technology/Laboratory Animal Veterinary Association Congress 2013*

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## Abstract

A workshop on reducing severe (substantial) suffering was held at a UK meeting for animal technologists and laboratory animal veterinarians in March 2013. Delegates discussed the roles that they were able to play in refining severe procedures, including identifying any scientific or practical obstacles to reducing suffering and how these might be addressed. Participants also suggested new resources or initiatives that could help to further reduce suffering and improve welfare. The report of the meeting includes recommendations for ethical or animal care and use committees (such as Animal Welfare Bodies), trainers, researchers and animal technologists and their professional bodies.

## Introduction

Animal technologists and care staff (hereafter referred to as animal technologists) may be required to monitor and care for animals during procedures that cause severe (substantial) suffering. They also play essential roles in ensuring that procedures are refined and that animals are effectively monitored and assessed, so that suffering can be alleviated as far as possible.

The new European Directive 2010/63/EU<sup>1</sup>, which includes explicit requirements to refine procedures and reduce suffering, was implemented in the UK as the revised Animals (Scientific Procedures) Act 1986 (ASPA) from 1 January 2013<sup>2</sup>. With this in mind, a workshop on *Reducing Severe Suffering* was held at the IAT/LAVA Congress in March 2013. The workshop aimed to consider the role of the animal technologist in implementing both legal and ethical requirements to reduce suffering, including through membership of the new local Animal Welfare and Ethical Review Body (AWERB), which will have similar roles to the local Ethical Review Process under the previous ASPA.

This paper aims to report on the workshop; generate further discussion within establishments; and make recommendations for further initiatives to help reduce severe suffering, on the basis of the discussion and delegates' conclusions on the day.

## Structure of the workshop

A total of 32 people attended, of whom the majority were animal technologists and Named Animal Care and Welfare Officers (NACWOs), with several laboratory animal veterinarians. The session began with some brief examples of how input from animal technologists has already successfully refined or avoided severe suffering within research projects. The rest of the workshop was devoted to a discussion session in which delegates could exchange ideas and experiences with respect to refining severe procedures; explore whether there were scientific or practical obstacles to avoiding severe suffering and discuss the roles that animal technologists can play in reducing severity in general. People were also asked to think of any resources or initiatives that could help them to achieve further reductions in severe suffering.

Workshop participants provided many examples of their opportunities to influence how protocols are conducted and refined within their own establishments (three specific examples are summarised in Boxes 1 to 3), as well as some practical difficulties that they sometimes need to overcome. The majority of the discussion and conclusions related to alleviating and avoiding suffering in general but they were nevertheless highly relevant to the primary focus of tackling severe suffering. The recommended actions on training and communication within the text were suggested by participants on the day, as new initiatives that would further help to reduce suffering.

## General good practice within establishments

Participants agreed that a good culture of care, with high levels of trust and interaction between animal technologists and scientists, is essential for the effective reduction of suffering. This works best if technologists feel 'empowered', with good support from Named Persons (NACWOs and Named Veterinary Surgeons) and facility management, and there is also an effective and well-supported AWERB. Animal

technologists should be among the AWERB members and all technologists should have good access to the AWERB regardless of whether they are members.

With a good culture of care, there is increased opportunity for animal technologists to have input into protocols, procedures and study design – especially including refinements – at the project design stage. This may be through AWERB membership, or involvement in project ‘teams’. Several delegates explained how project licence applications were circulated to animal technologists and Named Persons at an early stage within their establishments.

This kind of positive, open culture can be supported and informed by Home Office Inspectors. More experienced participants felt that Inspectors have become much more approachable than they used to be, with the result that the views and concerns of animal technologists were respected and supported by Inspectors and the relationship is more of a ‘partnership’.

Opportunities to attend and participate in animal welfare or 3Rs meetings, such as those held by the RSPCA, UFAW, the NC3Rs, IAT and LASA<sup>3</sup>, were highly valued. Meeting with colleagues to discuss welfare and refinement issues is especially important at these events and the IAT was mentioned as a good means of liaising with other animal technologists.

Delegates also shared a variety of examples of good practice within their establishments relating to project review, welfare assessment and refinement, as listed below.

Mice were used in the safety assessment of an anticancer drug that caused endotoxic shock at some doses. Animal technologists liaised with external colleagues caring for animals undergoing similar adverse effects, where chips were used to transmit body temperature and enable better definition of humane endpoints. Temperature chips were used in the study and it was discovered that an endpoint of a 2°C drop in temperature could be used to prevent avoidable suffering.

**Box 1.** Refining an endpoint

*Reviewing projects and monitoring outcomes*

- If licence applications are circulated to the AWERB in good time, any significant welfare issues and potential refinements can be identified and addressed well before the project begins. In some instances AWERBs have suggested pilot studies of protocols involving severe procedures, so that the actual impact on the animals can be better assessed and understood and refinements identified and trialled.
- Some establishments completed a form for each

protocol, setting out the species, strain, age, sex, housing and care, procedures and humane endpoints. These are located near the animals’ housing so that they are accessible to all. In addition, a clearly defined plan of action for all animals in the event of welfare problems, including who to contact when out of hours, is displayed in all areas.

- Regular or *ad hoc* retrospective reviews can be conducted, in which actual severity is assessed and the potential for refinement is reconsidered – rather than just one review at the end of the study.

*Assessing welfare, recording and communicating observations*

- Effective day to day welfare assessment is critical, e.g. using scoring or ‘traffic light’ systems tailored to each project. Spending ‘quality time’ with the animals, including extra handling and socialisation, also helps to understand their normal behaviour and thus to better identify when there could be a welfare problem.
- Internal ‘passports’ help to alert staff to potential welfare issues for genetically altered (GA) animals, including heterozygous crosses. These documents are similar to the passports that have been developed for use when transporting GA animals<sup>3</sup> but with an emphasis and focus on local information requirements. For example, internal passports define in detail what is ‘normal’ for each line or cross, making it easier to detect animals with additional welfare problems.
- Technology can be used to communicate about animals within large or multi-site facilities. For example, some participants explained how they can take photographs of animals and send the images to Named Persons via secure email. Others used streaming video linkups to enable Named Persons or researchers to assess disease progression in animals.

*Refinement*

- Housing, husbandry and care refinements, such as ensuring appropriate groupings of social animals and providing environmental enrichment, can help to reduce suffering due to procedures as well as improving the quality of life for animals in general. Providing good quality housing has been shown to reduce both behaviours associated with pain and analgesic requirements<sup>5,6</sup>
- Some establishments regularly focus on refining humane endpoints, taking advantage of new technology where possible. This requires monitoring of relevant literature on both endpoints and potentially useful technological developments\*. For

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\* This is within the remit of the Named Information Officer, whose role is discussed later, but others can also contribute towards accessing new knowledge.

example, infrared thermometers and implantable temperature transponders have been successfully used to refine endpoints and significantly reduce suffering in vaccine studies and some disease models<sup>7,8</sup>.

## Training

Good training in assessing and reducing suffering was regarded as essential. Those present at the workshop were satisfied with the level of training that they had received through a combination of modular licensee training, IAT qualifications and National Vocational Qualifications (NVQs). The consensus was that all animal technologists should do Home Office training modules 1 to 3 (which include ethics, the biology and husbandry of the species and recognising pain and distress), even if they did not conduct regulated procedures. This was because the modules were recognised to *instil the correct mind set* in trainees, which then has to be consolidated and built on through good in-house training and Continuing Professional Development (CPD).

C57/BL6 mice were bought in at six to eight weeks old and housed in groups of ten. This led to fighting so that groups had to be split up and animals disrupted. Animal technologists suggested altering husbandry protocols to permit some used nesting material to be transferred when cage cleaning and males and females were group housed in separate rooms. Problems with aggression ended and the mice are now successfully group housed.

### Box 2. C57/BL6 management

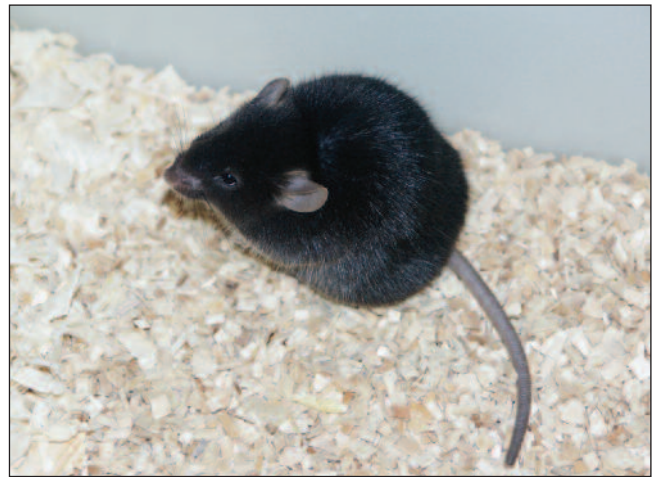
It was felt that training should include up-to-date information on new approaches to assessing animal behaviour and welfare, such as ‘grimace scales’<sup>9</sup>. Although it is not always feasible to implement techniques such as these locally, delegates took the view that keeping up with developments in these fields encourages people to think more about ways of assessing animals and to keep open minds about what causes animals to suffer and how animals may show subtle signs of suffering. A good level of ongoing access to literature (e.g. the IAT and UFAW Handbooks<sup>10, 11</sup> and other resources) is essential.

## Recommended actions on training:

- Ideally, all scientists should have to be animal technologists for a while. This would help researchers to gain better understanding of animals and their behaviour and to understand how technologists feel, so that they might perhaps consider more fully what they are asking technologists to do when severe procedures are involved. All researchers whose projects include

severe procedures should at least go and see the animals undergoing these and observe the effects.

- More training in animal behaviour and biology should be provided for researchers, to enable better understanding of the impact of research on animals, the benefits of refinement and techniques for recognising and alleviating suffering.
- Work should be done to facilitate better recognition of more subtle indicators of poor welfare or suffering, as this can help to refine endpoints and – ideally – avoid severe suffering. This could include producing training resources including pictures and video clips of animals at different levels of suffering, not just severe (Figure 1). Some material like this is already available at the Assessing the Health and Welfare of Laboratory Animals website (<http://www.ahwla.org.uk/>).



**Figure 1.** This mouse is beginning to experience adverse effects associated with a tumour. Body shape and posture are slightly altered and the coat is slightly ruffled in appearance. Appropriate action at this point, and/or increased monitoring of the animal, could help to prevent more severe suffering.

Photo credit: AHWLA

## Communication

All delegates emphasised that good communication was the most important factor with respect to reducing severe suffering and promoting consistency in how this is done. The US-based Laboratory Animal Welfare Training Exchange ([www.lawte.org](http://www.lawte.org)) was mentioned as a good example of facilitating communication on training issues, including the exchange of training materials. In the UK, communication about all 3Rs is one of the roles of the Named Information Officer (NIO). This post is one of the specific requirements for personnel in Directive 2010/63/EU<sup>1</sup>, as set out in Article 24 (1b): ‘Member States shall ensure that each breeder, supplier and user has one or several persons on site who shall ... ensure that the staff dealing with animals have access to information specific to the species housed in the establishment.’

The NIO may well be a senior animal technologist, although this is not a foregone conclusion and it is up to the local establishment to appoint the most suitable person. Whatever the background of the NIO, others can also take on the task of retrieving new information. For example, animal technologists can gather information from courses, meetings and colleagues. With respect to reducing severe suffering, technologists can encourage the NIO to specifically seek out information on refinement that is relevant to procedures at their establishment, or pass their own findings on to the NIO for further dissemination. The AWERB was also regarded as a valuable means of internal communication about refinement.

The importance of sharing information between animal technologists was a recurring theme and the ability to discuss the issue of severe suffering and exchange ideas and information about refinement and the culture of care, were both rated highly in participants' feedback forms at the end of the session. Delegates also mentioned actively using the IAT/EFAT journal (*Animal Technology and Welfare*) and meetings to communicate and exchange ideas on a range of topics including refinement.

A neuroscience researcher wanted to house guinea pigs individually post-surgery, due to concerns that they would gnaw one another's wound dressings. Animal technologists discussed further options with the researcher and pointed out that going from group housing to individual housing in an unfamiliar environment post-surgery could well affect results. It was agreed to pair house the guinea pigs following surgery and there were no problems.

**Box 3.** Guinea pig housing post-surgery

Approachable animal technologists, who cultivate good relations with scientific staff, were viewed as essential for building a culture of cooperation and good communication with respect to reducing and avoiding severe suffering and to refinement in general. This requires confidence and support, as outlined earlier (one group described how positive it was to be able to ask colleagues for a second opinion about an animal and be sure that they would be supported if necessary). Relationships can be greatly improved by initiatives that bring people with different roles together, such as internal seminars and discussions where researchers present an overview of their work to animal technologists, to provide a better understanding of the objectives, animal 'models' and potential benefits of their projects. This can help staff to suggest appropriate refinements and – very importantly – gives animal technologists more confidence to raise welfare concerns with researchers and ask for further discussion or for refinements to be implemented.

## Recommended actions on communication:

- Research and testing facilities should set up exchange programmes in which animal technologists and NACWOs could work at, or visit, other facilities to learn about refinement techniques and how these are researched, implemented and supported.
- Establishments should ensure that research staff include details of the level of suffering experienced by animals in their publications, with the refinements that were put in place to alleviate any pain or distress, so that other researchers can implement these. The ARRIVE guidelines provide a good basis for this approach<sup>12</sup>.
- The IAT should set up an online chat room for animal technologists. As an example, the American Association for Laboratory Animal Science (AALAS) hosts the Techlink mailing list [http://www.aalas.org/online\\_resources/listserve.aspx](http://www.aalas.org/online_resources/listserve.aspx), but a UK equivalent is needed.

## Some difficult issues

Some delegates had found researchers reluctant to implement refinements (to husbandry or procedures) that would reduce or avoid severe suffering. This was usually due to concerns about introducing new variables, or generating data that would not be compatible with previous research – or sometimes for economic reasons, or simply the fear of change and a desire to maintain 'traditional' practice.

Participants had also experienced problems with respect to assessing animal suffering (and therefore being able to reduce it), which can 'drift' towards suboptimal practice which then becomes established as the norm. Under-implementation of refinement and ineffective assessment of severity can clearly both impact on the ability to reduce severe suffering and animal technologists need support if they are to challenge the *status quo* and improve practice. As minimising suffering is a requirement of the ASPA, support should always be forthcoming.

However, some delegates reported that they were increasingly able to negotiate with researchers about changing and refining experimental and husbandry protocols and about improving welfare assessment, due to the improved status of animal technologists and better trust between people with different responsibilities. This was also expressed as less of an 'us and them' situation.

A further problem identified by participants was the lack of time that there can be to implement some refinements, such as making proper observations of animals and undertaking habituation programmes (although it was noted that breeders could initiate the latter). The time factor was also an issue in pre-study

briefings, where implementation was patchy and animal technologists less likely to be at these meetings than Named Persons, even though input from technologists is recognised as being highly valuable.

In practice, most of the problems identified within the workshop were fundamentally financial ones. For example, allocating sufficient staff time to monitor animals effectively, conducting pilot studies, funding CPD, implementing refinements such as heat pads or additional nesting material and purchasing technology such as webcams (for monitoring) or temperature chips all cost money. The consensus was that all of these measures are money well spent, for both animal and human welfare as well as the potential scientific benefits.

## Conclusion

The workshop participants were strongly motivated to reduce suffering at all levels, especially severe suffering and in general felt well supported in their attempts to do so. This is of course a relatively small sample of animal technologists and results may well be biased given that the delegates were IAT members, seeking Continuous Professional Development and supported in their wish to attend Congress – so were arguably more likely to receive positive encouragement than others.

On that basis, it would be a useful exercise for all AWERBs to review and consider both the examples of good practice and the difficult issues, to see whether any of the positive statements apply, or could be implemented locally – and whether any of the negative factors also apply and ought to be addressed. In particular, AWERBs could ensure that full use is made of experienced and empathetic animal technologists when designing, running and reviewing research projects.

The recommendations within this report relate to training bodies, providers of training material and the IAT as well as research and testing establishment staff and AWERBs. They will be submitted to relevant people and bodies and there are also some closing recommendations for animal technologists that can be drawn from this report:

- If you do not currently interact with the AWERB at your establishment, see whether you can join or attend meetings – or ensure that the AWERB knows of your interest and provides you with feedback.
- Pass this paper to your NIO and AWERB for consideration and discussion – are there any useful ideas, or does it highlight issues that ought to be dealt with?
- Go through this paper again and see whether it inspires you to play a more active role in refinement within your establishment, or to communicate more both internally and externally about your efforts so far.

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