



## Looking forward and looking back - opportunities to focus on 'severe' suffering

University of Manchester, April 2022

### Summary report

In April 2022, the RSPCA, in association with the University of Manchester, held an event attended by over 100 delegates in-person and online to share knowledge and promote new approaches aimed at reducing suffering for animals in research and testing. This event was one of a series of meetings in the RSPCA's ongoing 'Focus on Severe Suffering' initiative.

After a welcome and introduction from the University of Manchester, the first session opened with an introduction to the RSPCA's '**Roadmap to Reducing Suffering**' from the Animals in Science Department's Penny Hawkins. The [Roadmap](#) is a practical exercise that establishments can use to focus on procedures that could cause severe suffering, identify contributing factors and find ways of avoiding or refining these.

The following three speakers, all from the University of Manchester, presented ways in which severe suffering had been identified and reduced in their own research areas. Elizabeth Cartwright explained how suffering can be reduced in mouse models of cardiovascular disease by studying earlier stage cardiovascular disease rather than end-stage heart failure, resulting in fewer clinical signs in the mice. She also discussed the importance of choosing mice of the appropriate strain, age, and weight, and presented an approach which reduces the incidence of sudden cardiac death in a model of myocardial infarction. Next, Kevin Couper described a monitoring system based around a graded clinical scale of disease which helps avoid progression of adverse effects further than is necessary in mouse models of cerebral malaria. Finally, Stuart Allan discussed the '[IMPROVE](#)' guidelines - a set of guidelines developed by an NC3Rs working group aimed at providing support for researchers in refining rodent models of stroke - and highlighted some of the key recommendations, including the use of a 'traffic-light' monitoring system for post-operative animals.

The second session, '**Animal Diseases and Disorders**', opened with a talk from Ryan Waters of the Pirbright Institute, who detailed how having a clear understanding of disease progression and refining humane endpoints can reduce suffering in pigs used for the development of African Swine Fever vaccines. The next speaker was Tim Connelley from the Roslin Institute, who explained how studies on theileriosis in cattle can be refined by reducing the amount of time responses are monitored before applying a humane endpoint, managing clinical signs through interventions like NSAIDs and supporting feeding, and by limiting infection levels in study populations. The number of animals experiencing severe disease can

also be reduced by maintaining higher parasite stocks on fewer animals. The session ended with a presentation from Andrew Broadbent of the Pirbright Institute, who described how they observed that viral replication peaks before symptoms in an immunosuppressive viral disease of poultry, so that birds could be humanely killed before severe disease was reached. He also explained how the use of embryos and birds in some studies has been replaced with cell cultures.

The final session of the day, '**Retrospective Assessment**', was opened by James Bussell from the University of Oxford, with a presentation detailing how the 3Rs are applied and communicated across the university. Assisting with the retrospective assessment of severe protocols is a task of the Animal Welfare and Ethical Review Body ([AWERB](#)). Approaches to this at Oxford include the use of six sub-AWERBs to assist the main AWERB in the ethical review process, an internal 3Rs newsletter, an internal annual 3Rs day with invited speakers, and welfare meetings held three times a year with the 3Rs as a standing agenda item. These are attended by all project licence holders and many personal licence holders. The final talk was given by Claire Pearce, of King's College London, on the use of study plans for all experiments. Implementing these study plans, which include the licence, the protocol, the expected adverse effects and the study endpoints, has allowed unexpected adverse effects to be more easily identified, resulting in reduced suffering and opportunities for more discussion and wider information sharing among staff.

The presentations were followed by a discussion session in breakout groups, in which participants discussed the topic: 'how are AWERBs fulfilling the task of assisting with retrospective assessment of projects involving severe procedures?'. Some key points identified by participants included: the importance of a properly designed and targeted retrospective review form; the need to ensure that the retrospective review process includes opportunities for face-to-face discussions (as people do not always add incremental 3Rs improvements to forms); and the importance of engaging junior technologists with the AWERB to ensure they can contribute. It was also felt that active participation of project licence holders in the retrospective review process can be more helpful than having the retrospective review completed only by the AWERB, with feedback passed on to the project licence holder.

### Action points

The presentations and discussions raised a number of themes and practical approaches to reducing suffering and improving welfare. These included:

- Always assume that there is more that can be done to refine early humane endpoints, reduce suffering or improve animal welfare
- Suggest that your establishment uses the [Roadmap to Reducing Severe Suffering](#), as a useful and practical exercise that can help to reduce suffering (at all levels, not just severe)

- Use the ‘marginal gains’ approach, which involves lots of small improvements in the way that animals are cared for or used, to collectively make a significant, positive difference to each animal’s overall experience
- Review, and improve, animal monitoring and welfare assessment - this offers real scope for helping to reduce suffering and avoid mortality. This can be supported by detailed and relevant protocols with specific clinical signs and humane endpoints
- Review the frequency of monitoring - this may need to be higher for severe protocols, but may also need to be higher where a member of staff, a technique or a protocol is new - this may help reduce the risk of unexpected adverse effects
- Consider whether a model of a condition or disease can be studied at an earlier stage of progression, before the most severe clinical signs are reached
- Optimise factors such as strain, age and weight of animals, as these can have an impact on both animal welfare and experimental outcomes
- Ensure that communication and dissemination strategies are put in place so that 3Rs, and other, lessons learnt from retrospective assessment can be shared widely within and outside the establishment
- Design forms and processes for retrospective assessment so that they capture all the relevant information
- Whatever your role, make special efforts to share new approaches that contribute to reducing severity, including sharing with the AWERB
- If you sit on an AWERB or equivalent committee, ask to review how effectively it fulfils the task of retrospectively assessing severe protocols - you could use the slides from this meeting as a thought starter

### Further information

Visit the RSPCA [‘Focus on Severe Suffering’ website](#) for the latest information and resources on this topic - including the Roadmap and the summary and action points from previous meetings.

**The RSPCA would like to thank all of the speakers at the meeting, and the University of Manchester for providing the venue. This summary report has been produced by the RSPCA Animals in Science Department.**

**April 2022**

FOCUS ON   
SEVERE SUFFERING

