Laboratory animal, pet animal, farm animal, wild animal: which gets the best deal?

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Abstract

A veterinary surgeon wishing to practice in the UK promises, on admission to the Royal College of Veterinary Surgeons, that their "constant endeavour will be to ensure the welfare of the animals committed to [their] care" (RCVS 2006 Guide to Professional Conduct). Yet a constant dilemma is that the veterinary surgeon deals with the animal's welfare differently depending on the category into which the particular animal fits at a particular time — even though its ability to suffer is the same whatever the circumstance. A laboratory animal is considered by many to suffer the most insults to welfare, yet its welfare is protected by a plethora of regulations, ethical reviews, best-practice guidelines and vociferous public opinion. While any decision on its treatment will take into account the scientific outcome, the judgement will have been considered by many and the outcome already decided. The companion animal may be much loved by its owner but its veterinary treatment will be affected by the psychological state of that owner and his/her ability to pay; the animal's treatment becomes a 'family management' issue. In veterinary treatment of a farm animal, the benchmark for 'acceptable' suffering can be quite different; lower levels of welfare may be tolerated over considerable periods. When a wild animal is presented for treatment, the welfare of the individual may not be best served by anything other than euthanasia, yet treatment is often enthusiastically attempted. We explore this inconsistency of approach to animal welfare, using examples, and we attempt to rationalise and raise awareness of the inconsistencies. We propose the use of a welfare illustrator grid to increase cross-sector objectivity and improve harmonisation of approach across the sectors.

Introduction

Do we have a moral obligation to animals as sentient beings? Given that, for the most part, we accept that we do, then it follows that we have a duty to consider and protect, to at least some extent, their welfare. In the UK, our moral obligation to animals is reflected in legislative control such as the new Animal Welfare Act, the Animals (Scientific Procedures) Act 1986 and the development of the UK Government's Animal Health and Welfare Strategy. In the different sectors there is oversight and control from a plethora of different bodies and organisations. In the laboratory animal sector, regulatory oversight in the UK is provided by the Home Office and within each institution the ethical review process and the involvement of the Named Veterinary Surgeon, and other personnel, protect the welfare of the animals. For farm animals, the UK Farm Animal Welfare Council, the sector groups for each species, and the attending veterinarian oversee welfare. For pet animals, the UK Companion Animal Welfare Council, numerous animal charities, and the general practitioner veterinary surgeon are on hand. For wild animals, Defra's Wildlife Health Strategy provides guidance. This is a sub-strategy of the Government's Animal Health and Welfare Strategy for Great Britain (www.defra.gov.uk/animalh/ahws) which applies to all animals kept by humans, except for those used in the laboratory. The UK Government is currently seeking to improve compliance through less bureaucratic regulation by encouraging a partnership approach to animal welfare that promotes the benefits of animal health and welfare and ensures a clearer understanding of the costs and benefits of animal health and welfare practices. This is in accordance with the principle of better regulation that is being promoted. Individuals need to accept personal responsibility for their role in animal health and welfare in order to deliver it effectively, with more reliance on compliance, resulting in less need for enforcement.

In this paper we propose the use of a simple, illustrative and non-statistical approach to the assessment of welfare of animals in different sectors or of different animals in the same sector. Examples of welfare challenges to animals in different sectors are discussed and then used to illustrate this approach. The paper is designed to stimulate discussion among veterinary practitioners and animal welfare biologists and to increase objectivity in the assessment of welfare across sectors. The examples used are not intended to enable a definitive conclusion to be reached about relative welfare of all animals in any sector compared to all others *per se*, but rather are used to illustrate an approach for case-by-case assessment which takes into account certain characteristics that are consistent across sectors. Welfare assessment and its feedback into the management process are key to advancing standards of animal welfare. However,

for those involved in safeguarding the welfare of animals in different sectors, or indeed animals in different scenarios in the same sector, consistency of action may be hampered by reduced objectivity in the assessment of welfare across sectors or scenarios.

The laboratory animal

The public perception is that laboratory animals are often made to suffer, whether or not they think that this suffering is justified by the harm–benefit balance (the weighing of the costs incurred by the animal, in terms of suffering, against the benefits accrued to society from the result of the research). In reality, however, the UK Animals (Scientific Procedures) Act 1986 controls the conduct of scientific procedures which *may* cause an animal pain, suffering, distress or lasting harm (Home Office 2000). The implementation of refinement and application of humane end points frequently enables laboratory animals to be used in such a way that there is minimal or no suffering as a result of the procedures carried out (Russell & Burch 1959). The work will have been defined in the project licence, debated by the local ethical review process in the institution and thoroughly challenged before the licence is granted by the Home Office (Home Office 1998). The controls are rigorous, some might say excessive, and yet there is a significant group opposed to the use of animals in research (see eg www.speakcampaigns.org.uk, www.buav.org).

The pet animal

Keeping animals as pets is generally perceived as not involving welfare cost to the animal, yet this may not be the case. For example, one could envisage the following scenario taking place during the lifetime of a dog:

• A puppy has a minor road traffic accident in which it sustains a simple fracture of a limb and several superficial wounds. The first attempt at healing using external support results in a mal-union which then requires surgery. As it gets older, it develops chronic arthritis of several years' duration, reducing activity and leading to obesity. It then develops chronic heart failure with respiratory distress.

The farm animal

Public interest in the welfare of animals in the farming sector is increasing, and in a recent survey 62% of UK participants believed that there is insufficient policy attention paid to animal welfare in this sector in the UK (Eurobarometer 2005). These concerns are also reflected by the increase in food-labelling schemes to denote the source of meat (eg RSPCA Freedom Foods, Red Tractor/British Farm Standard logo) and the growth of the organic market (FAWC 2006). However, the organic market is not necessarily synonymous with improved welfare; for some consumers the bottom line is simply financial cost, not animal welfare; and it is questionable whether food-labelling schemes are adequately informative with respect to animal welfare (FAWC 2005). In the farming sector an example of an animal's experience may take the following course:

• A dairy calf develops pneumonia but recovers after treatment. At her first calving there is dystocia that requires some intervention and once in milk she develops mastitis.

The following year she has milk fever, which responds to treatment, but then sustains wounds which require suturing from falling in a ditch and becoming tangled in barbed wire fencing. She then becomes chronically lame, as are a significant proportion of her herd (Clarkson *et al* 1996; Hedges *et al* 2001).

The wild animal

Interest in wildlife is very high, as evidenced by the popularity of wildlife television documentaries, and concern for wildlife appears to focus on preventing death rather than necessarily improving welfare (eg opposition to badger culling [The Badgers Trust 2006] and seal culling [The Independent 2002]; promotion of the treatment of oiled birds [BBC News 2006] despite its low short- and long-term success [Sharp 1996]). When it comes to the use of rodenticides for control of wild rodent populations, there is scant concern for animal welfare, and current methods of rodent control fall considerably short of the humane idea of effective population control (UFAW 2006). A wild animal may, for example, experience the following during its lifetime:

• A badger loses significant weight during a dry summer because of a reduction in the availability of earthworms, which are a principal food, but it recovers in the autumn as the availability returns following rainfall. It then sustains serious fight injuries in a dispute over territory. It recovers from those but is then hit by a car sustaining further injury.

Welfare objectivity

An animal's quality of life and perception of its welfare is not affected by the reason for its life or the cause of its suffering, whereas human perception of welfare is affected by the animal's use and any human intention to cause harm. For the animal it is actual quality of life that matters — it is not what we think, or what we monitor, or how we score it, but what actions are taken that directly affect it. There is a necessity for evidence-based data to justify making changes to the care and husbandry of many animals, and it is generally agreed that more research is needed in this area. These research findings must be disseminated so that those who interact with, and are responsible for, the animals can be appropriately educated and the findings translated into actions that will improve welfare. Changes in the animals' welfare state must be assessed and feedback provided, from those working daily with the animals to those responsible for management decisions, allowing completion of the "refinement loop" (Hartley *et al* 2004; Lloyd *et al* unpublished data 2006). This requires engagement of all those involved, at all levels, to allow discussion of the feedback and consideration of further refinements. It is the final step of the refinement loop — implementation — that really matters, yet in many environments, despite all the data collection, monitoring and evaluation, it simply does not happen, or happens only slowly.

Clearly, the public's concern for the welfare of animals may depend on the sector in which the animals happen to find themselves. However, an individual animal's perception of pain and suffering is the same, whatever the context of its life.

Demonstration of good welfare frequently relies on resource-based measures — that is, compliance with codes — rather than outcome-based measures of animal welfare. It has been recognised that provision of good management and environmental resources does not guarantee that an animal is fit and healthy or has a high quality of life (Whay *et al* 2003). An animal's perception of its welfare depends on its past experience as well as what it is currently experiencing (Harding *et al* 2004) and is not affected by the sector into which it falls. On the other hand, the human perception of welfare and interpretation of its appraisal is affected by the use to which the animal is put and any intentional cause of harm.

In order to be able to assess the animal's welfare it is necessary to have in place some objective measurements of suffering or of well-being, such as those described in Morton and Griffiths (1985), Main *et al* (2003), and Honess *et al* (2005). These and similar schemes facilitate monitoring, allowing an evaluation of responses to treatment and logical decisions about intervention with euthanasia. Most schemes, however, give an indication of well-being only within a relatively short time-frame — at that particular moment or over the duration of that particular treatment. They rarely reflect cumulative suffering and the lifetime experience of the animal. This problem is common to welfare assessment schemes in all animal sectors. A more harmonised approach to animal welfare assessment across the sectors, which facilitates cross-fertilisation of ideas, with the aim of providing a more uniform approach that reflects the animal's experience, rather than its use, may be beneficial. For this we need a standardised set of concepts that allows some comparison across the sectors.

Assessment of cumulative suffering and mitigation of this suffering by human causation/intention factors

One way of conceptualising this is to use a welfare illustrator grid that, through the assessment and two-dimensional illustration of welfare, accounts for a temporal (when and for how long) component and the cause (intentional through accidental to inevitable) of the animal's suffering (see Figure 1) (Wolfensohn & Honess unpublished data 2006). The scales on the axes are ordinal rather than continuous — they indicate a level of welfare rather than an absolute measure. The axes themselves should remain constant (in nature and position) across grids being used in the same comparison, and this can be achieved most effectively when different assessments are overlaid on the same grid.

The first axis of the welfare illustrator grid, the 'Clinical' axis, places an assessment on the clinical condition of the animal. Parameters that might be used in this assessment will depend on the species and must be selected appropriately, but might include cardiovascular parameters, condition score, alopecia score, weight, leucocyte activity, and/or hormonal assays. The second, 'Behavioural' axis evaluates the extent of the animal's deviation from a normal behavioural repertoire and should reflect the animal's coping ability, for example with a change in the environment
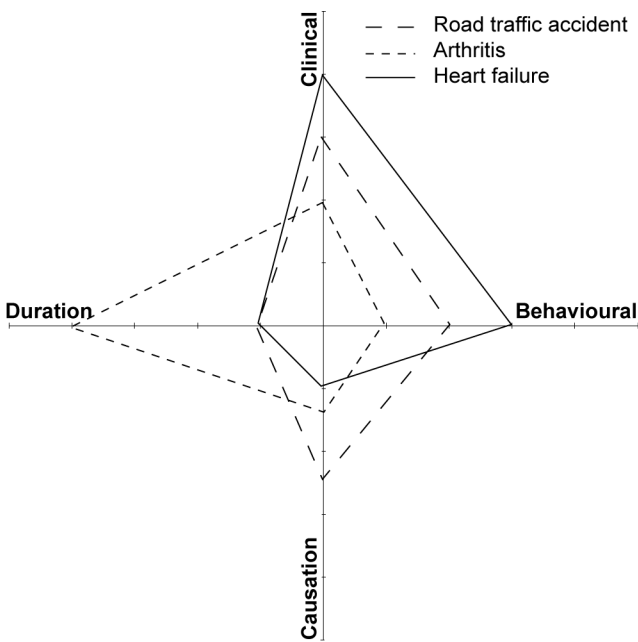
Figure 1
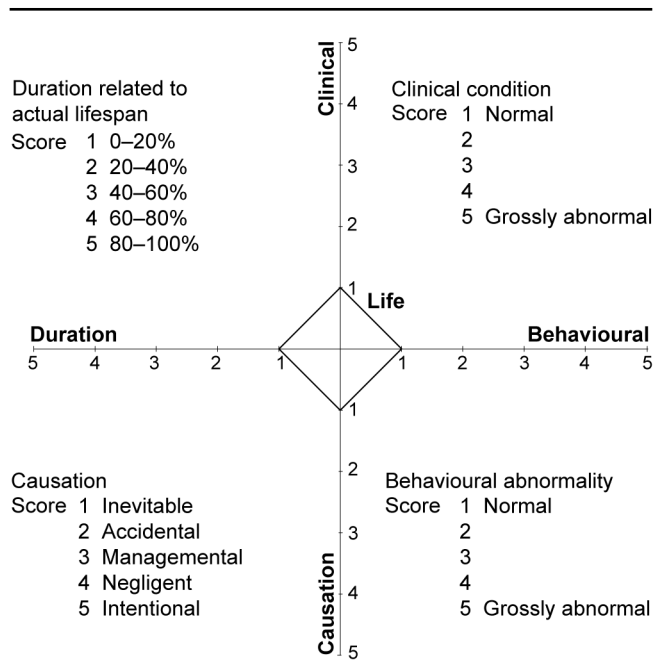
Welfare illustrator grid for assessing animal welfare across sectors through the comparison of four-sided figures derived from plotting the scores of component parameters of separate events which challenge an animal's welfare.
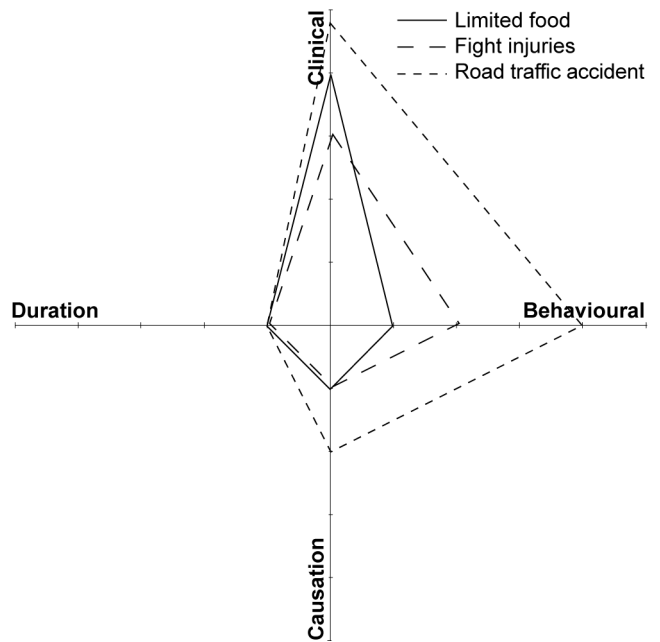
if it is brought into the surgery rather than being assessed in the home environment. Measurement of the deviation might include such parameters as time budgets, social interactions, incidence of fighting, grooming behaviour and/or reproductive behaviour. The third axis, 'Causation', gives a score for the cause of the suffering, which at one extreme would be overt intention (knowing that the consequences will cause suffering, and this suffering being totally preventable) and, at the other, inevitable events that are unpreventable. The utopia of all animal (or even human) life without suffering is simply unachievable, but the goal must be to prevent the preventable. Between these two extremes are recklessness and negligence resulting in inadvertent cruelty, which is often due to poor management practices (the lame cow, the poorly maintained fence) and accidental happenings (eg the untrained dog running loose off the lead). In some circumstances the latter may also have been preventable by better management practices including good risk-assessment and management (eg keeping the dog on the lead). Then there are 'life events', such as diseases of old age and the effects of infectious disease outbreaks, that simply happen, although the events can be mitigated to some extent, for example by diet, treatments and management. The welfare illustrator grid does not have a zero score, to account for the effects of such life events (Figure 1). Suffering cannot be zero, but should be assessed cumulatively and consistently, to minimise variation. The grid also has a 'Duration' axis to reflect the time-span of the incident being evaluated in proportion to the actual lifespan of the animal.
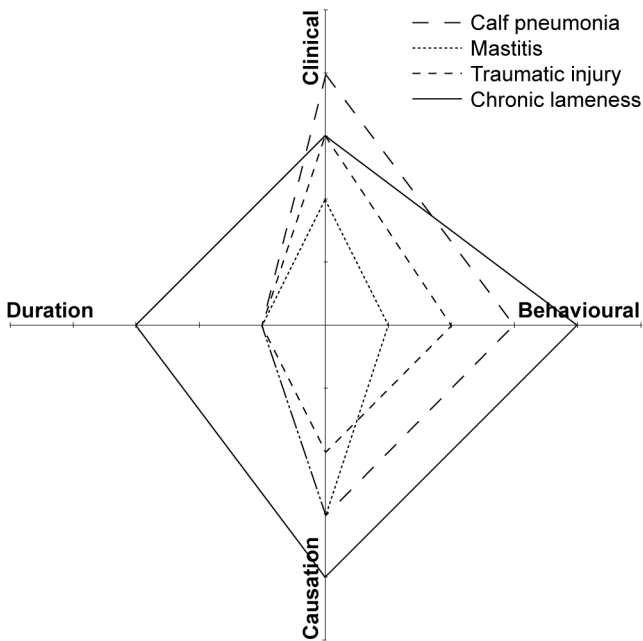
Figure 2

The use of the welfare illustrator grid to assess welfare in a dog, as an example of a pet animal, which has experienced three events that challenge its welfare.
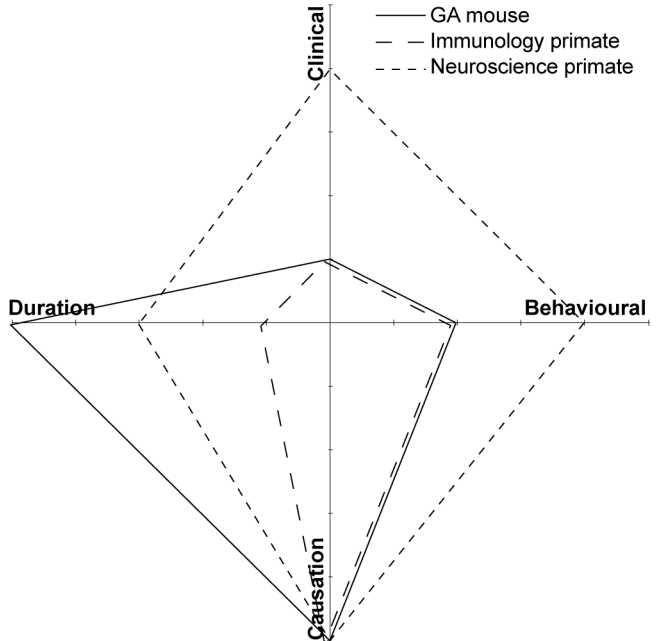
Figure 3

The use of the welfare illustrator grid to assess welfare in a cow, as an example of a farm animal, which has experienced four events that challenge its welfare.

Figure 4

The use of the welfare illustrator grid to assess welfare in a badger, as an example of a wild animal, which has experienced three events that challenge its welfare.

Figure 5

The use of the welfare illustrator grid to assess welfare in three laboratory animals (one rodent and two primates) on different research protocols presenting different welfare challenges. GA, genetically altered.

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Table 1   Individual polygon and cumulative areas (representational units) derived from the use of the welfare illustrator grid to assess animal welfare across pet, wild, farm and laboratory sectors.

Animal	Problem	Area in grid	Total
Pet animal: dog	Road traffic accident	8.2	27.8
	Arthritis	9.6	
	Heart failure	10	
Farm animal: cow	Calf pneumonia	14	51
	Mastitis	5	
	Traumatic injury	7.5	
	Chronic lameness	24.5	
Wild animal: badger	Limited food supply	5	31.5
	Fight injuries	5.5	
	Road traffic accident	21	
Laboratory animals			
Genetically altered mouse		21	21
Immunology primate		9	9
Neuroscience primate		31.5	31.5

Figure 6

The use of the welfare illustrator grid to compare welfare assessments across different sectors.
**(a)** Pet animal — dog;
(b) Farm animal — cow;
(c) Wild animal — badger;
(d) Laboratory animals.
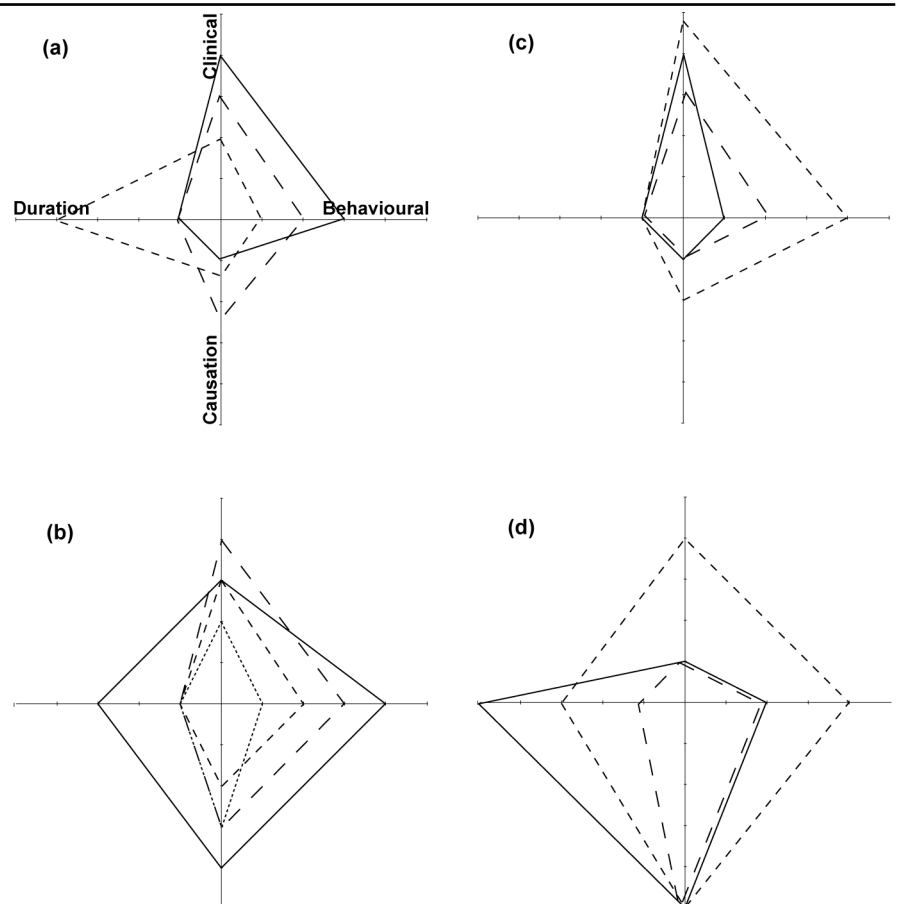
The scores are plotted on the grid and the points on the grid axes are joined to form a four-sided figure, the area of which can be calculated using simple geometry to illustrate the examples described above as shown; pet animal (Figure 2), farm animal (Figure 3), and wild animal (Figure 4). This method allows assessment of an animal or group of animals over a period of time to enable cumulative suffering to be evaluated. For the laboratory animal, the causation score will always be high because any suffering caused is intentional (Figure 5), although in this sector the ethical review process will have scrutinised and judged the value of the work on the basis of a harm–benefit assessment. This simply acts as mitigation in the cause of harm, it does not reduce the harm or affect the animal's welfare. The four sectors can then be contrasted to show welfare in different contexts between the sectors (see Table 1 and Figure 6). It
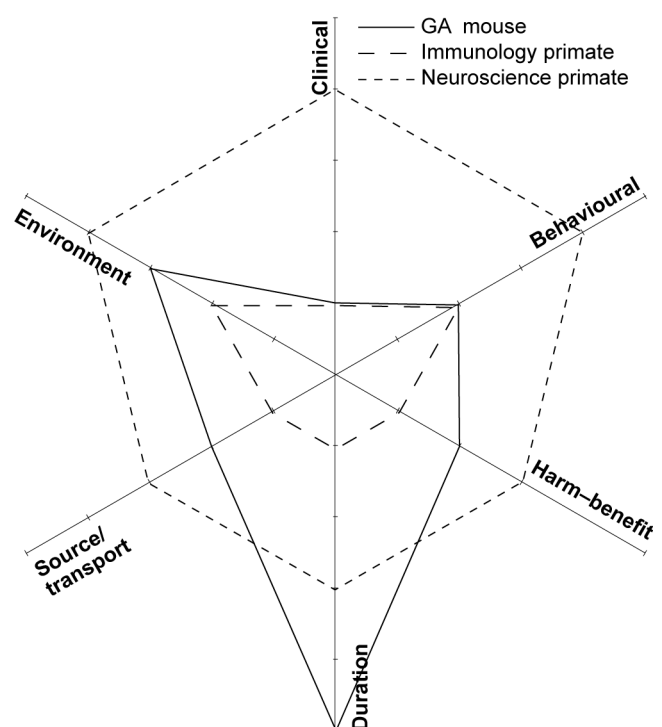
Figure 7
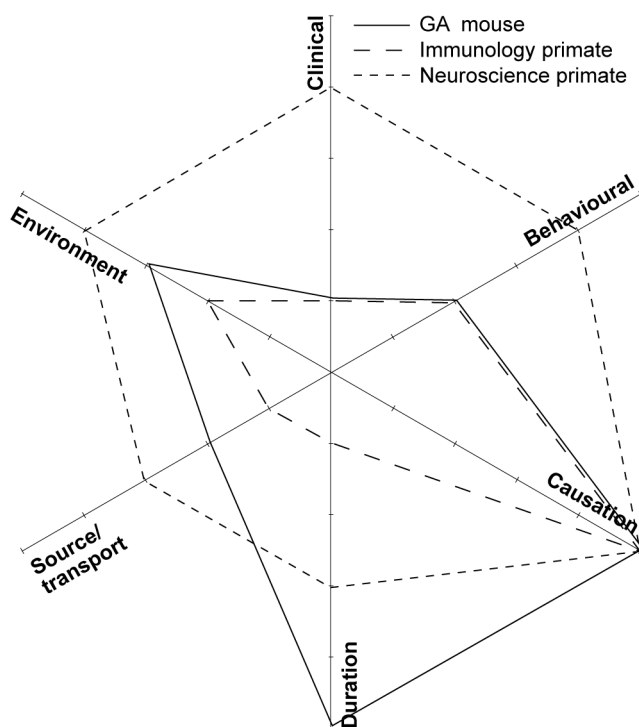
The use of the welfare illustrator grid, illustrating the use of additional axes, to assess welfare in laboratory animals. GA, genetically altered.

Figure 8

The use of the welfare illustrator grid to assess welfare in laboratory animals, illustrating the replacement of the causation axis with the mitigation (harm–benefit balance) axis. The score on the harm–benefit axis is higher where the harm caused to the animal is not so well balanced by excellent benefits of the research to society. GA, genetically altered.

can be clearly seen that the laboratory animal can be perceived to suffer the greatest welfare challenge. But is this actually just a reflection of the concern that is raised by animal suffering that is caused *intentionally*? Note that, for the laboratory animals in the example, the plotted areas represent three different animals; each is limited by a defined end point, and re-use of individual animals would only exceptionally be permitted under the Animals (Scientific Procedures) Act 1986. For primates used in neuroscience research, continued use is permitted, which is reflected in the scores for long-term use; this can be contrasted with the shorter-term use of primates used in immunology research. For the other three sectors, the examples show the same animal with different conditions and are a representation of the cumulative suffering of each individual (see scores in Table 1). The total lifetime scores given in the examples show that farm animals can experience considerable welfare challenges.

The intention of this welfare assessment approach is to improve harmonisation of approaches across the sectors, or, at least, to rationalise and raise awareness of the differences in approaches across sectors. There may be other parameters that it is felt necessary to include in the grid, such as an evaluation of the environment or factors relating to transportation, which can be achieved by including additional axes (Figure 7). For laboratory animals, the causation is always intentional, giving a high score on this axis, but this may be adjusted if one takes into consideration the harm–benefit balance or some mitigation for the harm

caused (Figure 8). Another example could be use of an axis related to social or cultural differences (for example, attitudes to use of animals in entertainment). However, mitigation will not improve the animal's perception of its welfare, although it will change the human perception of its welfare, and animals are dependent on human actions to affect their welfare state.

Conclusion and animal welfare implications

The continuous reassessment of welfare together with the renewal and progression of the goals of welfare programmes are essential to advancing animal welfare standards. Importantly, however, consistency of assessment or action may be compromised by reduced objectivity where those charged with optimising animal welfare are working across different sectors or scenarios. The critical issue is to prevent the preventable, and every individual who interacts with animals — which is most of us — needs to understand and accept their responsibility in delivering animal welfare, whether it is a laboratory animal, pet animal, farm animal or wild animal. The simple approach proposed here — the use of the welfare illustrator grid — is designed to stimulate discussion and to act as a tool to support those presented with the challenge of cross-sector welfare assessment in their efforts to improve their objectivity and consistency of action. If objectivity in welfare assessment is improved, then this will have a net benefit to animal welfare.

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