

Patients

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1.1 Animal Welfare Accounts

Veterinary professionals are concerned about animal welfare. Animal welfare, loosely defined, is about what is good and bad for animals – what is important for them to achieve and what is important for them to avoid. Veterinary work is about achieving states that are good for animals, such as health and enjoyment of life, and avoiding states that are bad, such as pain and illness. So core aims of veterinary work overlap considerably, if not entirely, with animal welfare concerns. This is why many of us chose to train in veterinary science, medicine or nursing and why most of us wanted to work within the profession.

Every person in the world has an effect on animal welfare. How they treat animals they own or meet; what food and clothes they buy; which charities they give money to; what they enjoy as entertainment and their environmental impact can have an effect on the lives of many animals. This effect may be sometimes beneficial. It may also be harmful. Each person probably effects a combination of harm and benefit (even the kindest people do some harm and even the most evil people may help animals by accident) and has an overall impact on animals' welfare. Each person has an *animal welfare account*, based on all their welfare impacts. If a person does more harm than good, then they have a negative balance. If a person does more good than harm, this is to their *credit*.

Those of us in veterinary practice are especially likely to have significant impacts on the welfare of patients and other animals. Sometimes, we have a positive impact by lessening the harms caused by other people or by natural processes such as



Figure 1.1 Surgery can cause harms as well as provide benefits. (Courtesy of RSPCA Bristol.)

disease. At other times, we have a negative impact by harming animals or helping other people to harm them. Our veterinary roles provide us with *animal welfare capital*, which we can use as an investment to do good but which also gives us opportunities to harm animals – just as borrowing against capital can allow people to incur greater debts. Each of us should make our own animal welfare account as healthy and positive as possible.

Having a healthy animal welfare account requires maximising *welfare credit* and minimising *welfare debt*. Harms should be minimised wherever possible (just as it is not sensible to borrow more than you need). Some harm may be necessary in order to gain bigger welfare benefits, for example when surgery causes pain but cures the animal of a painful condition (which we can think of as an investment). At other times, welfare benefits can be obtained only by taking certain risks, for example where surgery risks causing neuromas or phantom limb pains (Figure 1.1), and we may have to speculate to accumulate.

This approach suggests that we should make every effort to cause good welfare while avoiding causing harms. We could think of this in terms of our overall impact on animal welfare, a sort of *animal welfare footprint*. But it seems better to think of it as each leaving a legacy – good or bad – on animal welfare. Veterinary work provides great opportunities to leave a valuable and significant legacy, and this book may provide some additional suggestions to help readers do even more than they already do.

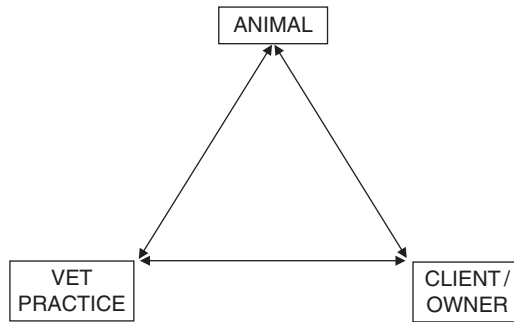


Figure 1.2 Key relationships in veterinary practice.

Whether we consider animal welfare to relate to animals' feelings, their treatment, their biology or their lifestyle, we can be confident that these things are important for animals in some way. This makes veterinary professionals well placed to determine and to achieve animal welfare goals as well. We have an understanding of biological science, interact daily with the pet-owning public and with the animals themselves, and are respected sources of advice in the community. The different people within veterinary practice and professions have different roles and different opportunities to help animals. But we all face similar situations and have the same aims as veterinary professionals.

In this role as veterinary professionals, we face a number of pressures and tensions. We see welfare issues every day, and many are recurrences of seemingly unending problems, despite our good work. We are personally involved in and affected by the pressures, tensions and conflicts we experience. These can cause stress, disillusionment and anger. Some people even leave the veterinary professions, and this is both terribly sad for them and a great loss for animals – especially if it is some of the most welfare-concerned people who are vulnerable to these stresses. We have relationships not only with patients but also with clients (Figure 1.2). In many cases, achieving our animal welfare goals helps people. It can help owners who want their animals' lives, health or behaviour to be improved. It can also help veterinary professionals by reducing the personal and moral stresses and improving profitability. In other cases, we have to balance the conflicting demands. As individual practitioners, we have to balance our wish to achieve our animal welfare goals with client requirements, legal constraints and public concerns. And as professionals, we have to balance being advocates of animal welfare with other goals such as benefitting human society and helping each other. This book looks at how we can best improve animal welfare while respecting these constraints.

We also face conflicts between animals. For example, concern for our patients would lead us to perform caesarians where necessitated by breed conformation. But performing such caesarians perpetuates the problem and allows those

conformational traits to continue, leading to increased need for caesarians. In this case, veterinary professionals are both part of the solution and part of the problem. Maintaining a healthy welfare account requires balancing these concerns. In addition, when we do cause harm, either deliberately or through helping our patients, we can improve our welfare account by paying something back. For example, if we perpetuate poor husbandry or breeding (even with the best intentions), then we should *offset* that harm through proactive efforts to promote better practices.

We can maximise our animal welfare account and solve welfare dilemmas by considering many important issues, including the accountability that veterinary professionals have towards animal welfare (discussed in Sections 1.2 and 1.11), our responsibilities (Sections 1.3 and 1.4), the use of science (Section 1.5) and ideas of what is good for animals (Sections 1.6, 1.7, 1.8, 1.9 and 1.10).

1.2 Animal Welfare Accountability

Veterinary professionals have a special role within society that makes their animal welfare accounts especially important and prominent. During the veterinary profession's 250 years, it has become increasingly prominent as a force to improve animal welfare and is increasingly held to account for how it treats animals and how animals are treated by society as a whole. Each veterinary professional has a duty to play their part in helping their profession to fulfil its responsibilities to society.

Modern veterinary practice can be traced back to horse marshals' and farriers' development of medical treatments and surgical procedures, such as firing, bleeding, castrating and tail-docking. By the eighteenth century, such therapies were routinely applied to cattle, sheep and pigs as rising human populations and breeding strategies made individual animals increasingly valuable.

Veterinary practitioners gained a prominent position in safeguarding animal health, but they were far from a profession. This waited upon scientific and medical developments disseminated through education beginning with the first veterinary course in Lyon in the 1760s, followed by others in Alfort, Turin, Copenhagen, Vienna, Dresden, Gottingen, Budapest, Hannover, Padua, Skara and London, and later schools in Toronto, Montreal, Ithaca, Iowa, Santa Catalina, Buenos Aires, Rio de Janeiro and Olinda.

Professional regulation addressed the opportunities for charlatanism (Porter 1992; Hall 1994), with the establishment of professional bodies such as the Royal College of Veterinary Surgeons (RCVS) in 1844, the American Veterinary Medical Association (AVMA) in 1863, the Canadian Veterinary Medical Association (CVMA) in 1949 and the Brazilian "Conselho Federal de Medicina Veterinária" (CFMV) in 1968. These provided society with a guarantee of knowledge, ability and professionalism.

These developments paralleled changes in society at large that increased the respect for animals. Political changes led to widening social progress and protection of vulnerable groups such as slaves, women and children. Scientific discoveries

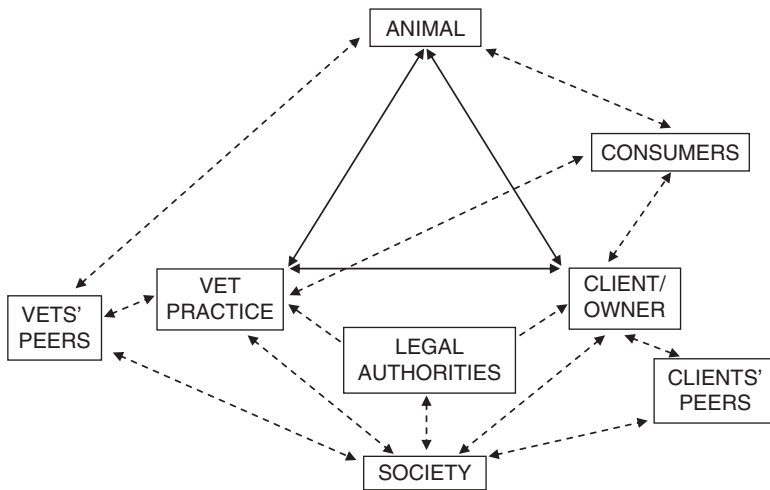


Figure 1.3 Societal relationships in veterinary practice.

highlighted the phenotypic and genetic similarities between humans and other animals. Animals began to gain legal protection, with increasingly progressive laws against specific cruel practices, abuse and vivisection.

By the start of the twentieth century, veterinary professionals had a number of societal responsibilities based not only on their key relationships with owners and patients, but on their wider societal relationships with other animals, governments, other veterinary professionals and society at large (Figure 1.3). Alongside veterinary professionals' primary relationships with animals and clients, the profession also had other vital duties to wider society, such as protecting public health. In addition, the professional status of veterinary practice created new responsibilities for individual practitioners towards their profession and to society.

Since the early twentieth century, there has been a golden age of developments within veterinary science, often paralleling developments in human medicine such as antibiotics, fluid therapy and painkillers and other forms of analgesia. Therapies were often developed on animal experimental subjects, applied to human medical patients, and then adapted to animal medical patients. These developments stimulated the development of veterinary disciplines such as imaging including ultrasound and radiography, immunology to study the bodies' reactions to disease, epidemiology to study the spread of disease, molecular biology to understand the body on a subcellular level, genetics and chemotherapy.

On the one hand, technological developments allowed higher levels of care and, combined with increased treatment of companion animals (Figure 1.4), increased the transference of techniques and protocols from human medicine. On the other hand, technological developments made it feasible to keep animals in high-production systems. Veterinary professionals could prescribe pharmaceuticals,



Figure 1.4 The increased importance of companion animals has altered veterinary work. (Courtesy of David Carpenter.)

such as vaccinations and antimicrobials (e.g. penicillins), and operations, such as tail-docking and de-beaking, in order to address system health problems. In some cases, scientific developments went further and advanced methods to increase productivity, such as the use of artificial insemination and growth promoters like bovine somatotropin.

Such changes in modern farming methods prompted a reconsideration of animal welfare issues, which were eloquently and influentially raised by critiques of widespread husbandry practices such as Ruth Harrison in the 1960s and Peter Singer in the 1970s. This led to the creation of animal welfare science as a discipline, promoted especially by the activities of Universities Federation for Animal Welfare (UFAW) since the 1920s, the launch of the Brambell Report in 1965 and the establishment of the UK Farm Animal Welfare Council (FAWC) in 1979. Animal welfare is now an established scientific subject, with its own international journals (e.g. *Animal Welfare*), learned organisations (e.g. UFAW) and academic courses. The development of animal welfare science resulted in a distinction between animal *welfare* and animal *health*. Animals could have their basic physiological and medical needs met despite suffering significant welfare compromises such as frustration, boredom, loneliness and anxiety.

Some people feel the veterinary profession now has a rather poorly defined place in contemporary animal welfare debates due to the implication of practitioners

in intensive farming, the veterinary profession's focus on health matters and the separation of health and welfare. Many individual veterinary professionals have contributed considerably to the development of animal welfare science and to policy-making. But they are often a few voices amongst many, and in many countries they lack the authority to provide the determinative viewpoint or the most progressive drive on animal welfare issues. Indeed, in many countries the profession is losing its status as an animal welfare authority.

The risk of losing this status comes while the public, and many veterinary professionals, still appear to consider veterinary professionals' role as being to promote animal welfare. Prominent members of veterinary professions have promised to do more for animal welfare and to concern themselves with wider concerns than only health. Several professional bodies have created structures for individual members to help them advance animal welfare through policy-making, education and specialisation.

The veterinary professions are therefore at a time of both high risk and great opportunity. Our development has provided us with a number of social accountabilities to owners, animals, society and each other. But our historical development can only describe what responsibilities we have had; it cannot prescribe what our responsibilities should be in the future. We have the chance now to decide our core responsibilities and what distinguishes our special place as a profession. Society, many owners and most individual practitioners appear to consider that this focus should be beyond animal health, farming productivity and public health. Society, owners and individual practitioners consider that we should be accountable for animal welfare.

1.3 Animal Welfare Responsibility

If everyone has an *animal welfare account*, then what particular responsibilities do veterinary professionals have? Veterinary professionals have the same general responsibilities to animals as other people but are more accountable because we have more opportunities to cause greater harms and fewer excuses because of our greater knowledge. But veterinary professionals also have duties that laypeople do not.

In many countries, the licence to practise as a veterinary professional is limited to certain people. This restrains other people from conducting potentially harmful procedures. This restriction is beneficial when it stops untrained people from conducting potentially harmful procedures or misusing drugs. But this restriction also places an additional responsibility on those who can provide procedures to do so when necessary, since nobody else can provide them. Such veterinary responsibilities come with our veterinary privileges.

Often veterinary duties are specific responsibilities towards our patients (Yeates 2009a). By taking patients into our care, we are undertaking to work towards maximising their welfare. We have particular duties to those animals, which should motivate us to look after them and provide a certain level of treatment. We have

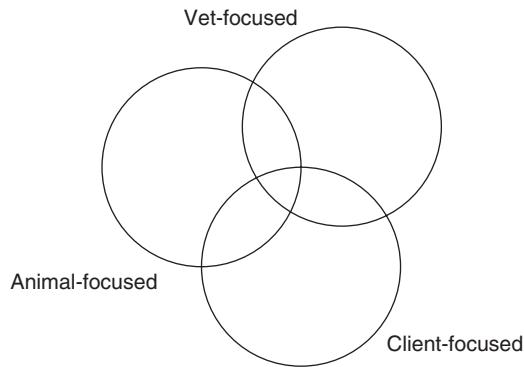


Figure 1.5 Value-based approaches to veterinary decision-making.

duties to owners who have entrusted their animals into the care of veterinary professionals with good faith that those animals will be looked after.

Veterinary professionals have social responsibilities because they have joined a profession where animal welfare concern is expected (Rollin 2006a). Animal welfare responsibilities might be explicitly implied by professional regulations or implicitly required by public expectations. Public expectations include those of society and of other veterinary professionals, whose cooperation and professional relationships are based on that assumption.

Some veterinary professionals specifically promise concern for animal welfare. In the USA, veterinary surgeons may swear the oath of the AVMA, which was recently changed to include a promise “to use my scientific knowledge and skills for the benefit of society through the protection of animal health and welfare, the prevention and relief of animal suffering ...” (AVMA 2011). In Brazil, veterinary surgeons may swear the oath of the CFMV, which includes a promise to “apply my knowledge to scientific and technological development for the benefit of the health and welfare of animals ...” (CFMV 2002). Veterinary professional bodies also often claim to look after animal welfare: by making such a claim, they undertake a responsibility to fulfil it.

Veterinary professionals also have a responsibility to care for animals simply *because we care about animal welfare*. Most applicants for veterinary courses and jobs are highly intelligent and motivated individuals, who could have chosen careers with shorter hours, less stress and better pay. Veterinary professionals have *already* made a choice to sacrifice their personal interests so that they are in a position to help animals. Veterinary surgeons have a responsibility towards animal welfare because they have taken that responsibility on.

Veterinary professionals therefore have a duty to perform *welfare-focused practice*. This approach is an alternative to *vet-focused* practice, which considers the interests of oneself, one’s colleagues and one’s profession, or *client-focused* practice, which considers the interests of clients, although these three can overlap (Figure 1.5). Veterinary professionals do have duties to clients and themselves,

but this book considers that good veterinary practice is predominantly welfare-focused. One is not a good surgeon simply by knowing where to cut. Being a good surgeon involves good decision-making, providing good analgesia and post-operative care and knowing when not to operate. The same animal welfare responsibilities apply in all areas of practice.

1.4 Legal and Professional Responsibilities

Our responsibilities to animal welfare are often underscored by our legal responsibilities. The law provides a backdrop for all our actions, and anxiety about legal consequences can cause unnecessary stress to many veterinary professionals. While this book cannot give legal advice for particular countries, it is possible to sketch certain types of rules that relate how veterinary professionals treat animals alongside the client-focused and owner-focused legal issues discussed in Section 2.2.

Some laws apply to governments and institutions that make decisions. Some countries such as India and Germany include animals in their constitutions. Some international agreements also mandate concern for animals, such as the Treaty of the European Union and the European conventions for the protection of pet animals and animals kept for farming purposes. These laws directly recognise animals' status and prescribe a level of protection. Governments then make laws that apply directly to people, including many elements of criminal law. These laws are interpreted by judicial courts, which make specific decisions about particular cases, with the result that different animals may have inconsistent levels of legal protection.

Many laws proscribe things being done. In most, if not all countries, anti-cruelty legislation is amongst the first pieces of legislation that are brought in. Several countries' laws prevent various negative outcomes, such as causing *unnecessary* suffering, killing animals without good reason, dog fighting or performing certain mutilations. Other laws prescribe positive outcomes, such as caring for an owner's animals, mandating disease control or maintaining biosecurity.

Other laws require things to be done only under certain conditions. For example, many countries' laws state that mutilations such as tail-docking can be performed only on certain animals by certain people using certain methods. Many countries permit experimentation on (vertebrate) animals only under a licence and following ethical review of proposed projects. Several countries require licences for breeding certain animals, owning pet shops, riding schools or boarding kennels or slaughtering an animal for public consumption. Some laws mean people need a licence to own certain animals, such as dangerous animals and farm animals. Often licences are given only under certain conditions, for example that people are trained or have appropriate facilities. More and more countries are requiring licences before people can own any animals at all.

Most countries with an established veterinary profession also have laws that restrict who can practise as veterinary surgeons or veterinary nurses. Often these

laws require veterinary professionals to have certain qualifications (e.g. a recognised veterinary degree). Limiting the licence to practise has an additional benefit of allowing the regulation of veterinary professionals. This is often achieved by making membership of the profession conditional upon following certain rules, which are usually described in a deontology or code of practice. These professional rules may prohibit certain welfare-unfriendly procedures, such as kidney transplantation from live donors. They may make other welfare-friendly procedures mandatory, such as emergency first aid. They may also prescribe general approaches such as ensuring the welfare of animals committed to the veterinary professional's care.

Laws and professional rules usually coincide with what society thinks acceptable or unacceptable (e.g. murder). Other laws coordinate action in ways that society thinks useful (e.g. which side of the road to drive on). Often our laws do not tell us what to do but allow a range of options from which we can choose the most acceptable. Consequently, most people follow the law most of the time.

Sometimes the law appears to conflict with what we think is the right thing to do for a particular case. However, this appearance is often misleading. Fortunately, courts often accept a reasonable excuse as a legitimate defence and many prosecutors only proceed when prosecution is in the public interest. For example, a stray animal may be presented in extreme suffering. Thinking only of a law against destruction of property would suggest it should not be given the euthanasia it needs. But the need to avoid unnecessary suffering should provide a legal defence against prosecution for reasonable efforts to prevent suffering. Veterinary professionals should not be *overly* concerned by possible legal ramifications. For example, it may be legitimate to euthanase a stray animal that is suffering only moderately but which is unlikely to be claimed and is unsuitable for rehoming or releasing.

Nevertheless, there may be cases where we might think the law is wrong. Laws may proscribe ways to improve welfare (e.g. stealing someone else's animal) or permit actions that worsen welfare (e.g. shooting or irresponsible breeding). Sometimes following the law may lead to animal welfare compromises, and improving welfare would require breaking the law. Veterinary professionals have a vital role in evaluating the current laws and professional rules and suggesting improvements. This means that welfare-focused decision-making must look beyond simply analysing what our country's law or professional body says.

1.5 Science

Veterinary professionals' education and decisions are prominently based on knowledge generated by the sciences, including animal welfare science and veterinary science. Science is often described as a single way of thinking, but it actually uses several different methods. Hypothetico-deductive approaches start with scientists generating a general hypothesis about the world (e.g. that swans are

white). From this, scientists generate more precise and testable hypotheses (e.g. that the next animal of genus *Cygnus* will reflect light of all visual wavelengths). They then obtain data that either support or refute that hypothesis. Inductive methods involve data being collected without any explicit, specific prior hypotheses and analysed to identify relationships such as risk factors. Both methods have advantages and disadvantages and are often combined.

Both hypothetico-deductive and inductive methods are based on a number of features that make them *scientific*. Both use relatively simple observations that are consistent between people, quantitative data analysed using standardised statistical methods based on agreed mathematical axioms. In this way, both use *building blocks* to work from simple agreed ideas to more complex conclusions, with which people should agree, using which should be repeatable in different situations and at different times.

These efforts to make science more reliable mean that science is seen as a way to obtain objective knowledge. Non-scientific beliefs can be inaccurate because they involve an invalid generalisation or because they are skewed. Beliefs involve an invalid generalisation when they are based on a limited number of observations, which relate only to specific, non-representative animals. Such beliefs can include those based on an owner's personal experiences of their previous animals or a veterinary professional's personal experiences of their previous cases. Beliefs may be skewed when they are influenced by individual biases, which alter a person's interpretation of the observations. These include *confirmation biases*, where we tend to take more notice of observations that confirm what we already believe, *self-interest biases*, where we tend to be more ready to believe facts that we want to be true, and *emotional biases*, where our beliefs are affected by our emotions.

The objectivity of science makes it a valuable tool in decision-making, especially in determining trustworthy factual beliefs. Veterinary professionals should encourage the use of science in decision-making, both within evidence-based veterinary medicine and within veterinary and animal welfare policy-making, and it is good for decisions to be based on science. However, decisions should not – indeed cannot – be based *only* on science, for several reasons. Science also has its limitations, just like law.

In many cases, there simply is no scientific information. Some subjects are not studied because the results are obvious without the need for the study, some because they are not sufficiently interesting to scientists or funders, and some because they concern hypotheses or things that would be unethical to test. For example, it would seem wrong to study the effects of chainsaw injuries on cows. So we do not have any scientific data on bovine chainsaw injuries. Nevertheless, we can have a fairly confident belief that chainsaws will cause tissue damage, haemorrhage and pain behaviours, based on our personal experience of similar injuries and common sense. Such absences of data mean we cannot say that decisions should be made only when scientific data are available, although this position is expressed quite often by people trying to preserve the status quo. In many cases, we can – and

should – make decisions about how confident we are that a treatment will work, often based on experience or understanding of physiology, pathology and pharmacology or simple common sense.

Even where scientific data are produced, studies are not always 100% accurate. Studies can involve errors, chance effects, subconscious biases (e.g. in interpreting data) or even conscious manipulation (e.g. publication biases). Studies may therefore disagree, and we have to choose which data we use, and this choice is often a non-scientific choice. This means it can be skewed or biased, and this is especially dangerous if the final decision is then presented as completely scientific. There is also a danger that people dress up facts to look more scientific, for example by presenting them pseudo-scientifically as numbers or as surveys. So, even where data are available, we must use science appropriately and critically.

Even where there are reliable scientific data, there can be limits to what those data can prove. Results can demonstrate statistical probabilities about the animals that were studied in the experiment or study (often compared to pure chance, e.g. in “p” values). However, these probabilities may not apply to other animals in other situations (e.g. other species or individuals). Decisions whether to extrapolate are yet more non-scientific decisions about whether that extrapolation is justified.

Furthermore, there are some things that science cannot prove because they are outside of scientific methodologies. Three examples are especially important for us: death, feelings and the future. If animal welfare science assesses what happens to an animal (while it exists), then it cannot study what does not happen to the animal while it no longer exists. If science assesses observable events, and animals’ feelings are unobservable, then science cannot prove that animals have feelings. If science describes what occurs in the past, then it cannot describe what will occur in the future.

Veterinary professionals therefore need to use other methods to convert scientific information into animal welfare assessments and decisions. This inevitably – and beneficially – involves using both emotional processing and logical, comprehensive and critical reasoning. Fortunately, these are skills that veterinary professionals develop. We have an understanding of the limitations of science, an appreciation of probability and uncertainty, an ability to tailor evidence to individual cases and experience to make future assessments. These are all valuable skills that go beyond science that veterinary professionals can possess.

1.6 Achieving and Avoiding

Veterinary professionals have the skills to use information, reasoning and judgement to work out what is worth achieving or avoiding. These decisions are an essential part of animal welfare assessment and clinical decision-making.

Many things are worth achieving or avoiding for other humans. We often think we should help, or at least not harm, our clients, such as by giving them value for

Box 1.1 Examples of what may be important for animals.

Negative feelings (e.g. pain)
Positive feelings (e.g. pleasure)
Satisfaction of negative preferences (avoiding what it wants to avoid)
Satisfaction of positive preferences (achieving what it wants)
Health or biological functioning
Longevity
Productivity (e.g. milk production or feed conversion ratio)
Naturalness of behaviours (similarity to wild equivalents)
Normalness of behaviour relative to itself at other times
Normalness of behaviour relative to similar animals in similar circumstances
Naturalness of environment
Freedom
Quality of care and husbandry
Intentions of carer (e.g. cruelty versus neglect)

money. We often think we should help, or at least not harm, other humans, such as by minimising public health risks. Treating animals can provide worthwhile human benefits such as companionship, financial profit, experimental data and food, alongside human harms such as emotional stress, financial costs, aggression and zoonotic diseases that humans can catch from non-human animals.

Some things are worth achieving or avoiding for ourselves. We may think we should develop our expertise and knowledge, make money, satisfy intellectual curiosity and avoid guilt, grief, regret or litigation. Treating animals can provide worthwhile benefits to oneself, such as respect, financial profit, experimental data and education, or harms to oneself, such as emotional stress, financial costs, zoonotic diseases and aggression.

Other things are worth achieving or avoiding for the animals. There are many things that veterinary professionals or owners may think are worth achieving for animals (Box 1.1). Many of these things have *indirect* value for animals. Things with indirect value are worth achieving or worth avoiding for an explicable reason – you can answer the question “Why is that good/bad?” with an explanation. Some such factors *cause* an animal’s welfare to improve or worsen. These can be described as *welfare inputs* (Figure 1.6). Some important factors that influence animals’ welfare include the five welfare needs listed in Box 1.2. Other factors that cause good or bad welfare are even more removed, such as veterinary professionals receiving quality training, which should lead to better welfare for animals they treat. Other indirectly valuable things may *signify* that an animal’s welfare has improved or worsened. These can be described as *welfare symptoms*. Such welfare symptoms are things that are caused by feelings (e.g. a pain response) or that are caused by things that also cause feelings (a symptom of a developing disease), as



Figure 1.6 Food has indirect value as an *input* because it avoids hunger and promotes health. (Courtesy of RSPCA Bristol.)

Box 1.2 Five welfare needs (adapted from Animal Welfare Act 2006).

- Need for a suitable environment
- Need for a suitable diet
- Need to be able to exhibit normal behaviour patterns
- Need for the company of, or to be apart from, other animals
- Need to be protected against pain, suffering, injury and disease

represented in Figure 1.7. In some cases, signs of welfare problems are more removed from the animal, such as a line on a radiograph that indicates a fracture. Welfare inputs and symptoms of welfare are not always good or bad for animals in themselves. Veterinary training is not good for animals if the veterinary professional becomes an estate agent. A line on an x-ray is not bad if it turns out to be an artefact from the developer.

Causes and symptoms can be used to work out what is worth achieving or avoiding *directly*. For example, veterinary care is good for animals not in itself but because it helps to prevent or cure problems such as disease (and we would probably not mind a world without veterinary treatment if there was no need for that treatment). Disease is bad for animals because it causes them to suffer feelings of

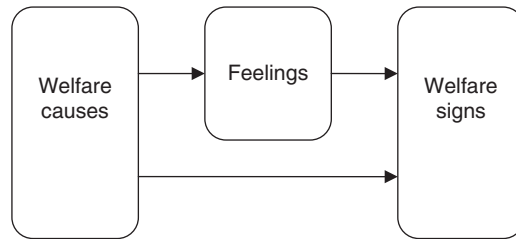


Figure 1.7 Causes and signs of good or bad animal welfare.

illness, such as pain and malaise (and we tend to be unconcerned by completely benign conditions). Feelings such as pain and malaise are bad in themselves. We can explain such feelings in terms of evolutionary or sociobiology, as drivers for appropriate behaviour, but we would still think they were worth avoiding regardless of their effects or their implications – such feelings are directly important. Similarly, health is good because it prevents suffering. Food is good because it is enjoyable and prevents hunger. For many veterinary professionals, thinking through such chains of questioning often end with statements about animals' feelings, leading to the conclusion that what have direct value for animals are the feelings that they experience.

This book deliberately does not define animal welfare or quality-of-life too narrowly. Many people have tried to define animal welfare, and the term is often used to mean whatever people want it to mean (Webster 2005). In fact, we do not need a rigid definition for animal welfare any more than we need a definitive meaning of veterinary, or even health. This book considers animal welfare as a vague idea of what is in animals' interests, i.e. what is directly good or bad for them as individuals. Feelings are central to this idea, but veterinary professionals should also consider things that can cause and signify feelings as well.

1.7 Feelings

Not every feeling is directly important. There is nothing intrinsically good or bad about the experience of recognition or the experience of seeing something yellow (or ultraviolet). What makes a feeling good or bad is whether it is pleasant or unpleasant – its *valence*. Pleasant feelings, with a positive valence, are intrinsically good; unpleasant feelings, with a negative valence, are intrinsically bad. An animal's welfare is good if its pleasant feelings outweigh its unpleasant feelings. An input is good for an animal's welfare if it makes the animal experience pleasant feelings or prevents it from experiencing unpleasant feelings.

A list of unpleasant and pleasant feelings is given in Table 1.1, with no attempt to separate those that different species have and do not have. Most are feelings with which veterinary professionals are familiar, but some features are worth elaborating.

Table 1.1 Feelings some animals may experience.

Positive feelings	Negative feelings
Anticipation	Fear
Comfort	Discomfort
Confidence	Doubt
Contentment	Restlessness
Control	Confusion
	Frustration
	Helplessness
	Resignation
Curiosity	Ennui
Interest	
Euphoria	Dysphoria
Excitement	Boredom
Expectation	Anxiety
Fellow-feeling	Loneliness
	Xenophobia
Gustatory pleasure	Disgust
Lust	
Maternal–infant affection	
Playfulness	
Relaxedness	Fatigue
Relief	Disappointment
Satiety	Hunger
	Over-fullness
Satisfaction	Distress
Sexual pleasure	
	Shock
Tactile pleasure	Pain
	Pruritus (itchiness)
	Thirst
Trust	Mistrust
Vitality	Illness
	Malaise
Wanting to achieve something	Wanting to avoid something
	Ambivalence

Many feelings have both negative and positive opposites (although not all, e.g. there is no positive correlate to thirst). For example, the pleasant feeling of general elation or well-being described as *euphoria* is opposite to an unpleasant feeling of general unease or disquiet often described as *dysphoria*. Similarly, some gregarious animals may experience a pleasant emotion which may be described as *fellow-feeling* when they are part of a collective group, such as their herd, flock,



Figure 1.8 Fear and curiosity both involve high arousal but are of different valence. (Courtesy of James Yeates.)

pack or shoal – and veterinary professionals may feel this as part of their profession. This fellow-feeling has two opposites. One is loneliness, which gregarious animals like cows, sheep, pigs, dogs, horses and rabbits may experience when isolated. Another is *xenophobia*, which non-gregarious animals like cats and hamsters may experience when in unwelcome company (alongside other feelings such as fear). As another example, a lack of stimulation can lead to *boredom*, *ennui* or even *apathy* (a lack of feelings). Boredom has several opposites, such as *interest* and *flow*, which is the feeling one gets when thoroughly engaged in a task (Csikszentmihalyi 1999).

Feelings can vary not only in terms of valence but also in *arousal*, which is the animal's level of excitation or activation (Figure 1.8). Feelings may be high arousal and negative valence (e.g. fear), high arousal and positive valence (e.g. excitement), low arousal and positive valence (e.g. contentment) or low arousal and negative valence (e.g. boredom). As these examples show, arousal is not obviously good or bad in itself. (Recent work also suggests another way feelings can vary in terms of the animal's level of *control*, *dominance* or *potency*.)

Some feelings relate to animals' motivations, such as *desire*, *anticipation* and *lust*. Some are caused by such motivations being fulfilled or not, such as *frustration* and *satisfaction*. Other feelings involve the affective experience based on what animals have already, such as *liking* and *pain*. In many cases, animals will experience both motivational and affective feelings, for example if they are experiencing pain they will also be motivated to end that pain.



Figure 1.9 Domestic pigs may suffer similar or different feelings to wild pigs or to humans. (Courtesy of James Yeates.)

Another relevant difference is between more transient emotions versus more persistent moods, such as happiness, sadness, confidence and depression. Such moods may affect an animal's personality, temperament and behaviour, allowing us to describe them as *sociable*, *playful* or *withdrawn* and as *optimistic* or *pessimistic* in terms of how they interpret ambiguous stimuli and risks.

Feelings may also be differentiated into *basic* and *higher* feelings, depending on the amount of cortical processing required. *Basic* emotions appear to involve relatively little processing and correlate largely to midbrain and limbic structures. These include feelings of pain, fear, lust, pleasure, etc. *Higher* feelings involve more processing in the brain cortices, especially in prefrontal cortical regions. These include feelings of guilt, shame, embarrassment, spite, pride and existential angst. The evidence that non-human animals experience such *higher* emotions is unclear, although there is growing evidence that some animals can have feelings such as injustice, doubt and grief.

One final important distinction between different feelings is in terms of which animals experience which feelings. Different species may experience different feelings, depending on their underlying biology and neurology, and the ecological niches and social contexts in which they have evolved. Indeed, the same feelings may not be experienced by animals of different breeds or genders or by those in different habitats. As an example in humans, the emotion of *being like a wild pig*, where people run amok, may be experienced only by New Guinean men – and perhaps wild pigs (Figure 1.9). Similarly, some feelings such as maternal affection



Figure 1.10 The feelings experienced in company depends on the species and on the individual. (Courtesy of RSPCA Bristol.)

may be experienced only by females in many species where only the females are involved in caring for their young. In addition, different *individuals* may experience different emotions, even in the same situations. For example, the aforementioned species-based attribution of *fellow-feeling*, *loneliness* and *xenophobia* is oversimplistic: individuals in gregarious species may have different relationships with different individual conspecifics (Figure 1.10). It is vital for veterinary professionals to recognise possible human–animal differences, differences between non-human animal species and differences between individuals. At the same time, it seems highly likely that many emotions, especially *basic* emotions such as fear and pain, are experienced by most individuals of most domestic species.

1.8 Inferring Feelings

If feelings are worth achieving or avoiding, then the problem that science cannot observe feelings becomes a significant issue for veterinary professionals. We can see directly into our own minds (which was the observation that allowed René Descartes to conclude that he existed), but we cannot directly observe the feelings of other animals or of other humans (Figure 1.11).

Faced with this *problem of other minds*, some people give up. Positivist scientists argued that science should not study animals' emotions and that we should not be concerned with animals' feelings in deciding what to do. Fortunately, most



Figure 1.11 We cannot directly observe other animals' subjective feelings. (Courtesy of James Yeates.)

veterinary professionals use our common sense, which suggests that other animals and humans probably do have feelings. This common-sense approach is especially fortunate given that people cannot observe each others' emotions, but few scientists argued that other people should ignore scientists' welfare.

So how can we read other minds? Effectively, we must infer animals' feelings by comparing oneself ("I") and other animals ("them"). As an individual, I look at my feelings in certain situations and then compare other animals to myself. Where there are similarities, I infer that those animals have similar feelings. We can then compare other animals and humans with each other.

In practice, we tend to compare three things about ourselves and animals: their *context* (i.e. what is happening to them), their *biology* (especially their neurobiology) and their *responses* (e.g. their behaviour). If a vertebrate animal has an injury of a kind that would cause me pain (e.g. a skin burn), has similar biology to me (e.g. inflammatory processes, ascending nerves that carry impulses from damaged tissues and a central nervous system) and acts like I would act if I were in pain (e.g. withdrawing or vocalising), then I may infer that this animal is feeling pain. Such comparisons give us ideas of what things have indirect value because they cause or signify feelings, as in Table 1.2.

This approach is sometimes called *anthropomorphism*, but since the basic comparison is with oneself, rather than between animals and humans in general, a

Table 1.2 Comparative assessments used for causes and symptoms of feelings.

	Cause of feelings	Signs of feelings
Type of comparison used	Context-based	Behaviour-based
What to assess	Inputs	Symptoms

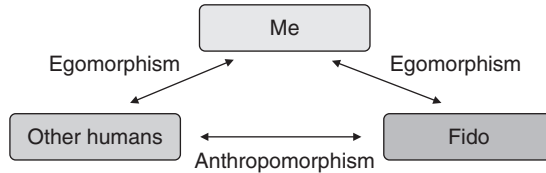


Figure 1.12 Inferring other’s feelings can involve *egomorphism* (comparing to oneself) and *anthropomorphism* (comparing to humans).

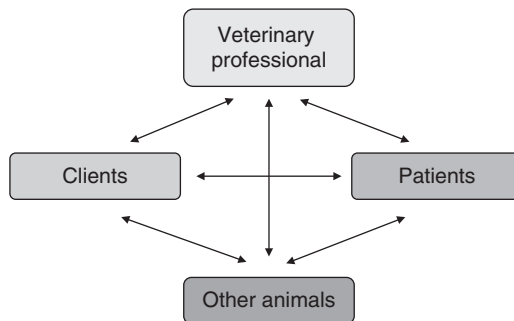


Figure 1.13 Comparisons for inferring mental states between humans and animals.

better term is *egomorphism* (Figure 1.12). It is easier to *egomorphise* with other humans, since they are more similar to me, but one can also make comparisons with other animals. One can also make comparison from other humans to other animals (which is more accurately described as *anthropomorphism*), from some animals to others (the basis of many animal welfare and veterinary scientific experiments) and from animals to humans (the basis of many experiments in biomedical sciences). Figure 1.13 shows the different relevant comparisons in veterinary practice.

The use of relevant comparisons should also bear in mind relevant *differences*. I am different to other humans and experience different feelings in different situations. Similarly, I am different to other animals and so may expect we will experience different feelings in different situations. Recognition of differences

Box 1.3 Inferred deep similarities between oneself and other animals.

- Animals have feelings
- Animals' feelings can change with time and circumstances
- Animals' feelings can relate to their contexts (contexts cause feelings)
- Animals' responses can relate to their feelings (responses indicate feelings)
- Animals feelings often correlate with biological responses (e.g. cortisol)
- Animals often do what they are motivated to do (behaviours indicate motivations)
- Animals are often motivated to do what they enjoy (motivational feelings coincide with affective feelings)
- Animals may experience negative feelings when their motivations are frustrated
- Animals can learn, based on feelings (e.g. conditioning)

means that veterinary professionals must not unthinkingly conclude that other animals experience the same feelings as humans. By the same token, differences also mean that we should recognise that other humans – including owners and colleagues – may experience very different emotions in circumstances and react very differently. This recognition of differences is part of *critical anthropomorphism* (or *critical egomorphism*).

It is easy to say that we should consider similarities and differences, but it is harder to work out when we should infer that animals experience similar feelings versus when we should infer they experience different feelings. The best way to do this is to look at deeper comparisons of more basic similarities, which can then give us generic descriptions by which to evaluate more superficial similarities and differences. For example, we can infer very basic similarities such as those in Box 1.3. (Sometimes these comparisons are so deep or general we do not even notice they are comparisons.) From these comparisons we can identify relevant differences.

Here are two simple examples. I enjoy eating chips. I could unthinkingly infer that cows also enjoy chips. Cows and I are similar in lots of ways (we both have stomachs, teeth and nipples, we both salivate, chew, digest, walk and vocalise, etc.). Cows and I are also different in lots of ways (they are heavier, wear less clothes, ruminate, have more stomachs, produce more milk, etc.), and some of these differences may be relevant. I can try to determine which differences are relevant by identifying deep similarities. I can observe that both cows and I are motivated to eat certain foodstuffs, that cows and I salivate on smelling certain foods, that cows and I have certain foods that appear suited to their gut biology and flora and so on. I infer a deep similarity: that we both enjoy those foods that we are motivated to eat, salivate on smelling and can digest. I observe that, for cows, these apply not to chips but to, say, total mixed rations (TMR) or grass. I infer that cows enjoy eating TMR or grass. As another example, I am scared of neither veterinary practices nor fireworks. But I tremble, show physiological stress responses and avoid things that

do scare me, and I infer the same for dogs. So when a dog trembles during firework displays or resists entering a practice, I infer it is scared.

Another deep similarity between animals and humans is that both our feelings appear to have evolved over time to help us respond to our environments. Feelings like pleasure and pain allow conditioning-based learning. Feelings like fear allow rapid *fight, flight or freeze* responses. Because feelings have evolved to help animals respond to their environments, they are likely to be caused by their environment and health (Boissy *et al.* 2007a) and to lead to (i.e. be indicated by) physiological changes and behaviours (Denton *et al.* 2009). This means that we can relate animals' feelings to their environment at the time and the environment in which they evolved.

Such reasoning allows us to identify a number of causes and symptoms of animals' feelings. Scientific studies and personal experience can add evidence to support a hypothesis that animals feel a certain feeling in a certain context, although this evidence is always circumstantial. More experience, agreement and scientific data can make us more confident that an animal will experience a certain emotion in a certain circumstance and that this circumstance is therefore worth achieving or avoiding. Some symptoms are also causes. Self-harming can both indicate pain and cause it. Chronic stress responses can lead to diseases such as gastric ulceration.

1.9 Pathological Causes of Feelings

Pathological causes of feelings, and their symptoms, are central to traditional veterinary practice. This section therefore cannot describe the myriad different pathological states and processes that animals suffer, so readers are referred to further reading. Instead, this section will concentrate on the issue of what pathological states mean in terms of welfare.

Some early animal welfare scientists thought of health as being directly important for animals. This facilitated the scientific investigation of animal welfare, because disease states and injuries can be readily observed and often quantified, and maintained a link between animal welfare and veterinary science. However, health does not have direct importance insofar as we can say that health and disease are worth achieving and avoiding because they relate to animals' feelings.

Health compromises are certainly important causes of feelings. Diseases and injuries may cause feelings of *illness*, such as nausea, pruritus, fatigue and malaise (Figure 1.14). Conversely, health may cause a feeling of *vitality* or *vigour*. This means that helping animals to get or stay healthy is a major part of improving their welfare. Prophylactic treatments can prevent problems. Remedial treatments can cure conditions. Palliative treatments can reduce the feelings caused by the condition without curing the condition. Palliating the feelings caused by disease and injury will also minimise welfare harms. Veterinary professionals therefore have a major role in improving animals' welfare.



Figure 1.14 Disease can cause animals to experience unpleasant feelings like discomfort and pain. (Courtesy of RSPCA Bristol.)

Health is also important as a sign of welfare problems. Increased susceptibility to disease can suggest chronic stress. Self-mutilation or psychological conditions can signify underlying mental stress. Speed of recovery from illness may also indicate animals' welfare, with negative feelings slowing healing and positive feelings enhancing recovery, as suggested by research in humans (Pressman & Cohen 2005), mice (Hockly *et al.* 2002) and rats (Passineau *et al.* 2001).

Mental health is one element of health with clear links to feelings. Many psychological or behavioural disorders can be associated with underlying motivational or affective feelings. Some veterinary professionals think of mental health as being part of a health-based concept of welfare. This is slightly misleading. Good mental health is not the same as happiness. Some animals (or people) may be completely sane but still unhappy; others may be completely insane but happy. Mental health is a useful concept for veterinary professionals, but one still needs to consider whether good or bad mental health causes pleasant or unpleasant feelings.

Poor health is additionally important as a deprivation. When an animal has a disability, it may not be able to do things that it enjoys. Such disability may cause frustration if the animal remains motivated to perform that action, such as a pig with a nose-ring, a horse with an anti-windsucking collar, a de-vocalised dog or a de-clawed cat. Deprivations can also be considered harmful to an animal even if an

animal does not consciously *miss* anything, because the animal would be better off with whatever it lacks (just as if someone defrauded me of an inheritance without me ever knowing about it).

One specific way in which poor health deprives animals of feelings is when it causes death. The process of dying is a cause of welfare harms insofar as the process of *dying* can cause negative feelings such as pain, malaise or fear.

Being dead prevents an animal having any feelings at all. Indeed, if an animal does not exist, then sentences like “this animal suffers...” make no sense. This means that being dead is not *directly* important for animals, hence the idea that “death is not a welfare issue” (Webster 1994). More specifically, being dead causes an animal to avoid the feelings it would have had if it had lived (Yeates 2009b). When the avoided feelings are pleasant, then they are worth achieving, and being dead deprives the animal of those feelings. When the avoided feelings are unpleasant, then they are worth avoiding, so being dead is beneficial. So death is indirectly important for animals. In fact, we can say that life is also not directly important to animals – life is important insofar as it causes feelings. A life that involves mainly pleasure is worth achieving. A life that involves considerable suffering is not worth achieving; rather it is worth being avoided.

Death can also function as a sign of animals’ welfare. More accurately, the *time* of death can be an indicator of an animal’s welfare throughout its life. A decreased longevity suggests that the animal had higher risks, greater demands or more stress during its life. By the same logic, one can also use the mortality rate within a herd or a treatment group in a clinical trial as an indicator of the group’s overall welfare. However, longevity and mortality rates are not accurate indicators. There may be significant inter-individual variation, which would need to be compensated for by averaging over many animals. In addition, many welfare problems are not fatal and so will not decrease longevity or increase mortality rates. Indeed, when suffering animals are kept alive by veterinary treatment, then increased survival time actually indicates worse welfare. This highlights the fact that veterinary treatment can lead to significant welfare compromises, and this is worth considering in more detail.

1.10 Iatrogenic Causes of Feelings

While veterinary professionals can help improve welfare by preventing, curing or palliating pathological causes of feelings, they also risk worsening welfare. Some of these risks are from misuse or errors, but some risks occur when therapies are used appropriately. These can be called *iatrogenic* harms in that they are caused by veterinary treatment (Yeates 2012a).

Iatrogenic harms are a risk not only in cases such as cosmetic mutilations (e.g. ear-cropping), which have limited welfare benefits, but in all veterinary interventions. Iatrogenic harms are part of each veterinary professional’s welfare

account. Every treatment involves a *welfare gamble* that the benefits will outweigh the harms, and veterinary professionals should try to make only rational and safe bets.

The most obvious welfare harm is pain. Operations or other interventions can involve tissue damage and inflammation. Animals may show post-operative pain-related behaviours, either local to the affected area (e.g. hypersensitivity, allodynia, lameness, licking and self-mutilation) or more general (e.g. inactivity or increased activity, hyperalgesia and altered moods) and physiological responses (e.g. increased heart rate, respiratory rate, blood glucose or cortisol levels, altered immune function, C-reactive protein and haptoglobin levels). From such causes and signs, we may infer that animals can experience post-operative pain.

Treatments can cause other feelings of illness. Vaccines and cancer chemotherapeutics may induce malaise. Anaesthesia and analgesia can cause dysphoria. Medications can cause adverse drug reactions. Surgery, joint treatments, cerebrospinal fluid sampling or blood sampling can cause infections, tissue reactions or thrombosis, with the subsequent clots causing tissue damage. Certain surgeries can increase the risk of specific harms, for example neutering is associated with predispositions to obesity and total ear canal removal (TECA) with facial nerve damage (as well as deafness).

Some therapies can cause fear. Dealing with problem behaviours symptomatically, without addressing underlying anxieties, can worsen problems. Classically, prescribing acepromazine for noise phobias may increase fear (Overall 1997; Sherman & Mills 2008), and symptomatic anti-vice treatments may increase horses' stress (McBride & Cuddeford 2001). More generally, veterinary treatment can cause fear through catching and transporting (Figure 1.15) and handling animals (Figure 1.16). Veterinary contact may be especially stressful if animals are rarely handled, such as wild or feral animals and some farm or exotic species, but even pet dogs may be nervous of humans (Rooney *et al.* 2007; Siracusa *et al.* 2008). Many domestic animals demonstrate what might be called *vet-fear*. Vet-fear varies between different animal individuals, for example some dogs may specifically fear males (Hennessy *et al.* 1997; Wells & Hepper 1999) or one particular clinician (Timmins *et al.* 2007).

Hospitalisation or isolation can cause distress, whether on the farm or yard or in a practice. A lack of space can lead to lack of exercise and boredom. Lack of conspecific (or human) company can cause *isolation stress*. Animals suffer a disruption of their normal routine and an inability to predict or control their environment (e.g. hospitalised dogs cannot choose when to go to the toilet). Consequently, isolated animals often show behaviours that may indicate welfare problems, such as vocalisations, repetitive behaviours and hyperactivity or lethargy.

Veterinary professionals may also perpetuate existing welfare problems. Life-saving treatment of suffering animals perpetuates that suffering. More subtly, suggesting or providing treatment gives owners an opportunity not to opt for euthanasia, a glimmer of hope that their animal may get better if it is not killed and a legitimacy to



Figure 1.15 Catching can cause iatrogenic harm to animals, so it needs to be done as humanely as possible. (Courtesy of SPCA Hong Kong.)



Figure 1.16 Handling can cause fear, especially for wild animals. (Courtesy of RSPCA Bristol.)

perpetuating its life despite its suffering. This can create a dilemma for veterinary professionals who want to offer palliation without perpetuating animals' suffering.

Veterinary professionals may also cause or facilitate further welfare problems to our patients. Providing pain relief to keep overworked horses in work allows that overwork to continue. Fracture repair or neurectomies may increase racehorses' risk of injury because the repair causes subsequent weakness or the removal of part of a nerve causes a loss of feeling. For example, the use of drugs such as antimicrobials (e.g. coccidiostats) or mutilations (e.g. tail-docking) may allow animals to be kept in unsuitable conditions such as impoverished pig systems.

Veterinary professionals can also cause iatrogenic harms to *other* animals. Hospitalising an animal with an infectious condition can lead to other animals contracting nosocomial infections in the hospital. Similarly, saving an animal with an infectious condition can lead to other animals catching that disease. Misuse of antibiotics or antiparasitics may lead to resistance that make these drugs ineffective for other patients.

Veterinary professionals can even cause harms to *future* animals. In some cases, treatments for breed-related conditions may perpetuate those conditions within the breed. For example, repairing genetic defects such as hernias without also neutering the animal may hide those defects and lead to their being passed on. Similarly, performing caesarians can propagate dystocias. In other cases, providing treatment to address some of the problems caused by welfare-unfriendly husbandry systems (e.g. widespread coccidiostats) may paradoxically perpetuate those husbandry systems by making them feasible. Treating breed-related conditions makes those breeds less of a bad purchase, since owners can purchase animals that will suffer future problems (e.g. atopy) but then treat those conditions (to some degree).

1.11 Beyond Health

Pathological and iatrogenic causes of animal welfare are not the only things that affect animals' lives. There are many other elements which are discussed in the next chapter. However, it is worth describing why these other causes should be important to veterinary professionals. There is an argument that veterinary professionals should be concerned only about health-related issues. There are several arguments in response to this.

A prophylactic argument is that many other aspects of welfare relate to health. So dealing only with health will still involve dealing with lots of other welfare issues indirectly. Since welfare problems can lead to health problems, preventative medicine should involve tackling those underlying welfare issues.

A clinical argument is that veterinary professionals should be concerned about welfare because mental states can affect healing and recovery. Thus, clinical success on rectifying health problems may be enhanced by addressing other elements of patients' welfare at the same time.

A responsibility-based argument is that veterinary professionals should be concerned about those welfare problems that they cause. This includes iatrogenic harms in the surgery, and the duty to avoid causing welfare problems underlies the medical doctrine of “first, do no harm”. This concern should extend to mitigating the effect of clinical advice, and veterinary professionals should at least be aware of where their recommendations may lead to compromises.

An expertise-based argument is that veterinary professionals have the knowledge, practicality and decision-making ability to make the best decisions, or at least to contribute valuably. If veterinary professionals tackle only health-related welfare issues, then who should tackle other welfare problems – “If not you, then who”? No other profession has the general knowledge, experience, practicality or respect, so veterinary professionals cannot pass the buck.

An autonomy-based argument is that leaving the public animal welfare agenda to non-veterinary groups, the resultant decisions will impact on veterinary practice whether we like it or not. It seems better for the profession to be involved in setting, and implementing, that agenda.

A definitional argument is that health involves or requires some degree of good welfare by definition. At the very least, health should include mental health. While mental health does not map perfectly onto welfare, nevertheless many welfare issues relate to poor mental health.

An undertaking-based argument is that veterinary professionals in many countries have *claimed* to address welfare issues. This may be a defensive tactic to prevent other people having more influence, in which case the claim is hypocritical. It may be an aspiration to be fulfilled, in which case there is a need to fulfil it. Either way, there is a grave danger if a respected profession fails to deliver on a promise to effectively advocate for animals. This danger is to animals, who will not be fully represented, and to the profession, who will seem arrogant and conspicuously uncaring.

A commercial argument is that veterinary professionals stand to gain from being at the forefront on welfare issues. People usually want their animal to be happier and are often willing to pay for it. Individual practices could therefore market themselves directly as helping animals’ welfare. Indeed, the profession itself stands to gain from being seen as animal advocates. Happier animals should mean happier clients. Happier clients can be more willing to pay.

A legal argument is that the animal welfare laws of many countries apply to veterinary professionals as to owners. Most prosecuting bodies appear reluctant to prosecute veterinary professionals for welfare offences, but this may not always be the case. Veterinary professionals, at least in many countries, do have a legal duty to care for their animals.

A prudential argument is that veterinary surgeons often end up with the unpleasant job of rectifying problems caused by poor welfare, not least the killing of unwanted or unrehomable animals. Many of these problems do not earn the practice much money, but they are emotionally draining, lead to stress and poor

work relationships and decrease job satisfaction. It seems sensible for veterinary professionals to try to prevent such situations from occurring.

A more positive argument is that veterinary professionals can enjoy helping animals. This is, after all, why many became veterinary professionals. Making a difference can feel better than making a profit. Driving animal welfare improvements in the wider world can feel good too.

Summary and key recommendations

- Everyone has an animal welfare account to maximise. Veterinary professionals have particular responsibilities towards animal welfare due to their knowledge, abilities, legal privilege and personal undertakings. Most veterinary professionals are concerned about animal welfare and are well placed to help but face a number of pressures and obstacles. This makes us part of the solution and part of the problem.
- Animal welfare *science* uses hypothetico-deductive and inductive approaches. Neither the law nor science can always tell us what to do. Decisions need to be based not only on science but also on emotions and values. Veterinary professionals are experts at applying science to individual cases.
- Pleasant (positively valenced) feelings are worth achieving. Unpleasant (negatively valenced) feelings are worth avoiding. Things may have value because they *cause* or *signify* better or worse feelings. Science cannot prove or disprove animals' feelings. We can egomorphically compare animal's and our own context, biology and responses. We must consider relevant me–other differences, by considering deeper similarities.
- Pathologies are important causes of unpleasant feelings. Death avoids good and bad feelings. Veterinary professionals have a duty to consider other causes of feelings. Veterinary professionals can cause iatrogenic harms or perpetuate welfare problems for non-patient animals.

Selected further reading

Further information on the history of the veterinary profession is provided by Dunlop and Williams (1996), Hatschbach (2006) and Swabe (1999), and the specific implications of the increased small animal work are discussed by Brown and Silverman (1999).

Further historical information on animal welfare movement is provided by Fraser (2007). Overviews of animal welfare concepts are provided by Nordenfelt (2006), Broom (2008), Webster (2005) and Can be found in FAWC (2009). The idea of direct welfare importance is discussed by Yeates (2010a). The significance of the negative versus positive, valence versus arousal and affect versus motivation divides are discussed by Yeates and Main (2008).

There are hundreds of veterinary textbooks on different pathological causes. Mental health is discussed by McMillan (2005). The “animals are not harmed if they don’t know what they’re missing” argument was first described by Crespi (1942) and is discussed more regarding wild animals by Mason (2006). The idea that “death is not a welfare issue” is best defended by Webster (1994) and an alternative by Yeates (2009b). Morgan and Tromborg (2007) provide a review of stresses caused by captivity. Isolation stress is discussed more by Sharp *et al.* (2002) and the effects of stresses by Moberg (2000). Iatrogenic harms are discussed more by Yeates (2012a).

