



**FVE & EAEVE REPORT ON
EUROPEAN VETERINARY EDUCATION IN ANIMAL WELFARE
SCIENCE, ETHICS AND LAW**

Adopted June 2013

EXECUTIVE SUMMARY

“Veterinarians are, and must continually strive to be, the leading advocates for the good welfare of animals in a continually evolving society.” (FVE/AVMA 2011).

Welfare science is a dynamic and multi-disciplinary subject; including the study of the mental and physical health of animals, as well as its ethical implications in relation to humans, the environment and regulation. The FVE strategy for 2011-2015 states that veterinarians have a professional and ethical responsibility to use their scientific knowledge and skills for the benefit of animal welfare. All veterinarians should be able to educate, inform and influence animal owners, caretakers, handlers and policy makers to protect and improve animal welfare. Welfare (and its associated research) is, therefore, seen as an important aim in veterinary education along with other key subjects such as animal health and public health. The veterinary profession will also be needed to monitor and help implement good welfare for national governments which will create future employment needs for the profession.

In view of the on-going scientific developments and societal expectations in this field, FVE decided to establish an *ad hoc* Working Group (WG) to map animal welfare teaching in undergraduate veterinary education and to develop a core curriculum. The WG comprised representatives of FVE, the European Association of Establishments for Veterinary Education (EAEVE) and the EU FP7 research project AWARE (Animal Welfare Research in an Enlarged Europe).

The Working Group developed an animal welfare curriculum (see Table), composed of a model syllabus, the corresponding learning objectives and a list of the essential Day One Competences (or learning outcomes). These will enable veterinary graduates to fulfil their role as primary advisers on animal welfare across all contexts of animal use. The model animal welfare curriculum was designed in order to be easily adapted and implemented at every veterinary school.

Many of these requirements tie in with the more traditional core Day One Competencies at graduation, particularly clinical competence, and so should not be seen as unique and requiring special coursework, although it might involve some novel inputs. Moreover, some of the Day One Competences suggested in the Table will complement other competencies e.g. holding a scientific

evidence based position, recognition of strong and weak arguments, provision of advice in relation to any wider public debate, and the close links between animal and human health, and animal health and welfare.

The mapping of the status of animal welfare education was done in two stages. In the first stage the WG, in collaboration with AWARE, an EU funded project, analysed the results of a survey in which 45 European veterinary faculties responded. It was found that courses, including farm animal welfare, were provided mainly at the Bachelor and Masters levels and were usually compulsory. The main focus of the education was ethology, followed by welfare assessment and legislation. In the second stage, a survey was carried out to obtain feedback on the FVE's proposed model draft curriculum: this showed that the main obstacles to strengthening animal welfare teaching include, by decreasing order of scoring importance: lack of space in the curriculum; difficulties in organising practical sessions; financial difficulties; lack of qualified teachers; and a low priority for animal welfare within that faculty. To overcome these obstacles, Section 3 of the report provides guidance on how animal welfare teaching can be organised in an already crowded veterinary curriculum.

Recognising and respecting the diversity of educational strategies and curricular approaches found in European veterinary programmes, the WG took an overall learning-outcome based approach to the teaching of animal welfare, further supported by an appropriate syllabus. This approach seemed to be generally acceptable and the proposed learning outcomes attainable. Almost all faculties agreed with the proposed list of learning outcomes, although less than half stated that they currently delivered these outcomes, and almost three quarters stated that they could reach these learning outcomes within the next five years. It will ultimately be up to each veterinary college to decide how to incorporate the learning outcomes into their curriculum and how the subjects are taught, bearing in mind that all veterinary education must meet certain EU standards. It must also retain public confidence.

Learning outcomes for Day One for veterinary graduates in respect of animal welfare related competencies (further details can be found in the full report)

1. Appraise different concepts as well as analytical frameworks of animal welfare and how they relate to practice and to the context in which they are set.
2. Apply sound principles to objectively evaluate the welfare status of animals and to recognise good and poor welfare.
3. Participate in animal welfare assessment, monitoring and auditing with the aims of improving the physical and mental health of animals.
4. Formulate an informed, science-based, view on animal welfare matters and communicate effectively with those involved in keeping animals.
5. Appraise the social context and participate in societal debates about animal welfare and ethics.
6. Retrieve up-to-date and reliable information regarding local, national and international animal welfare regulations/standards in order to describe humane methods for animal keeping, transport and killing (including slaughter).

RECOMMENDATIONS

1. The FVE and EAEVE should actively encourage all European schools to implement these Day One Competences and the corresponding learning objectives, and to have them

- incorporated and evaluated through the EAEVE/FVE accreditation system of veterinary schools.
2. European veterinary schools should ensure adequate time, staff and practical sessions for teaching animal welfare science, ethics and law.
 3. Animal welfare science, ethics and law teaching should be delivered in such a way that the study subject is clearly identifiable in its own right, while being integrated throughout the veterinary course.
 4. Animal Welfare science, ethics and law should be a core subject, and examinable with the same pass/fail criteria as other core subjects.
 5. European veterinary schools should encourage cutting edge animal welfare research as this will attract both students and top quality staff.
 6. CPD providers should incorporate advances in welfare, ethics and law into their programmes through the principles of life-long learning
 7. All staff, as role models, should be continually updated in Animal Welfare.

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SECTION 1: BACKGROUND AND OBJECTIVES

Objectives of this Report

This report has been produced by a Working Group (WG) of the Federation of Veterinarians of Europe (FVE) comprising representatives of FVE, European Association of Establishments for Veterinary Education (EAEVE) and the EU FP7 research project AWARE (Animal Welfare Research in an Enlarged Europe). This Report is aimed at those colleges that teach veterinary medicine and puts forward the background and basis for a model animal welfare curriculum for an undergraduate veterinary education. It takes into account current teaching in European veterinary faculties and proposes possible ways of incorporating animal welfare science and the associated subjects of ethics and law into a curriculum. The Report uses as its starting point the existing scientific literature on education in animal welfare, previous and current surveys on animal welfare education, as well as the diverse experiences of the WG members and the organisations they represent. Besides being of use to universities responsible for veterinary education within the European Union, the proposal for what might be included in the curriculum has been written in a way that we hope will be useful to supplement to the EU Directive on Recognition of Professional Qualifications (2005/36/EC), and as a reference for the EAEVE/FVE accreditation system. This Report should be seen as a way in which veterinary education can be harmonised across Europe (as well as internationally) so that animal welfare implementation can be on a level playing field with all veterinarians having similar competencies. This may be particularly important in regard to a national veterinary service in food production, public health, environmental and economic sustainability, and inspection protocols for welfare (OIE, 2012), and the implementation of international standards.

Why Vets need to know about Animal Welfare

“Veterinarians are, and must continually strive to be, the leading advocates for the good welfare of animals in a continually evolving society.” (FVE/AVMA joint statement on Animal Welfare, 2011)

“Veterinarians should be the leading advocates for the welfare of all animals, recognizing the key contribution that animals make to human society through food production, companionship, biomedical research and education.” (OIE, 2012)

Veterinarians are at the forefront of animal care, vested with the education, the power and the responsibility to protect and promote the health and the welfare of animals, on a daily on-going basis. Promoting physical health, however, does not necessarily go along with protecting the mental health of animals and the avoidance of pain and distress. For example, animals that are kept in confined conditions may experience mental distress

apparently without any evidence of poor physical health. While health issues are the traditional preserve of the veterinarian, the range of veterinary practice is rapidly expanding to encompass animal welfare in a broader sense with the expectation that veterinarians will be able to advise, in order to prevent and to treat illnesses related to problems of mental wellbeing that directly cause animal distress (evidenced e.g. by abnormal behaviours). Being able to measure and assess welfare parameters is as much a part of good clinical practice, as it is to diagnose illnesses, prescribe drugs and perform appropriate treatments. Moreover, it is a public expectation that the profession will be able to do so, and help protect the welfare of animals for whatever purposes¹ they are used.

FVE, EAEVE and OIE list some of the goals of a veterinary education in relation to animal welfare teaching (FVE/EAEVE adopted study programme for veterinary surgeons, 2012; OIE Recommendations for Day One Graduates, 2012). Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter (when relevant), management, nutrition, humane handling, and humane slaughter/killing. The FVE/EAEVE study programme (2012) was adopted by all European Veterinary Associations and Faculties, and the OIE recommendations will apply to over 170 member states in the world. Both of these request veterinary colleges to prepare graduates who can comply and implement good welfare standards.

All veterinarians have the opportunity and duty to provide education and knowledge that can promote welfare-friendly animal care practices. Veterinarians must not only work to implement existing standards, but must also contribute to ensuring the continuing improvement of those standards (FVE/AVMA 2011). Knowledge of welfare is also important from a safety viewpoint, as well as providing a business opportunity.

Members of the public demand greater transparency and veterinarians are increasingly called to comment, and defend their opinions, on animal welfare. Some recent television programmes² are good examples of this kind of challenge, and work as reminders of how society perceives issues involving the welfare in the fields of farmed animals and companion animals. In addition, consumers have recognised veterinarians as the best-placed professionals to ensure farm animal welfare (after the farmers themselves) (Eurobarometer 2007). Indeed the public expect that the veterinary profession should be at the forefront of promoting the welfare of all animals in all senses i.e. mental as well as physical health. It is not enough for veterinarians to be technically competent; they have also to be aware of their ethical and legal responsibilities toward different stakeholders (farmers, consumers, clients, policy-makers, professional colleagues, general public), in addition to their duty to protect the animals in their care.

¹ Animals are used for a variety of purposes such as companions, laboratory, zoo, sport, show etc

² It shouldn't Happen at a Vets', *Panorama*, BBC1, 22-07-2010; Pedigree Dogs Exposed, BBC1, 19-08-2008; Pedigree Dogs Exposed – Three Years On, BBC4, 27-02-2012. Equivalent examples can be found at other European countries e.g., Portuguese media coverage of the use of kennel dogs for educational purposes at a veterinary school (Nov. 2010); Italian TV report on cattle unfit for transport going to slaughter (2012)

Animal Welfare in Science and Society

The science of Animal Welfare is a multidisciplinary subject aimed at evaluating the welfare status of animals, identifying welfare problems and promoting corrective measures (for the benefit of the animals and their keepers). Although animal welfare has only emerged fairly recently as a discipline in its own right, the ethical underpinning will have existed since ancient times (Broom 2011). Animal welfare has been subject to great expansion since the 1960s partly because of intensification of farming practices. Ruth Harrison's ground-breaking book *Animal Machines* (1964) sparked a series of events leading to the Brambell Report (1965) which in turn led in the development of the Farm Animal Welfare Council's 'Five Freedoms'. This ethical framework remains valid to the present day (FAWC, 1993; Beekman et al. 2006; Ohl & van der Staay 2012) and has spread to other uses of animals, and how we keep and interact with them.

Animal welfare is a dynamic concept. From being primarily focused on physical health in order to prevent negative outcomes (particularly health from infectious and non-infectious diseases), animal welfare has evolved to include mental health and emotional states in animals. Those mainly studied are negative encompassing feelings such as pain, distress, boredom, suffering, and this has led to trying to recognise these states in animals and the ways in which they can be avoided, alleviated and measured. More recently, there has been a growing emphasis on positive mental states to include subjective experiences, such as happiness, pleasure and contentedness (Boissy *et al.* 2007, Yeates and Main 2008). Furthermore, there is growing acceptance that a more dynamic view of welfare is needed, with the implication that welfare issues arise when an animal has insufficient opportunity (freedom) to respond appropriately to a potential welfare 'challenge' through changes in its behaviour (e.g. Dantzer and Mormede 1983; Broom, 2006; Korte et al, 2007; Ohl and van der Staay, 2012). For example FAWC proposes that it is possible to assess the quality of life (QoL) of farmed animals that would enable a retrospective assessment to be made of the quality of their lives throughout their lifetime, including the manner of its death (FAWC 2009). This QoL assessment can then be used for decision making, in a similar way to human medicine; such as to compare the effectiveness of various (medical/surgical) treatments and husbandry methods. Moreover, such more dynamic concepts can be applied to all animals regardless of how they are used by humans.

Further, it is clear that animal welfare issues cannot simply be addressed by means of objective biological measures of an animal's welfare status under certain circumstances. In practice, interpretation of welfare status and its translation into the active management of perceived welfare issues are both strongly influenced by context and, especially, by cultural and societal values (Fraser, 1999; Nordenfelt, 2006). In assessing whether or not a given welfare status is morally acceptable veterinarians, developing their own opinion, must be aware that even scientifically based, operational definitions of animal welfare will necessarily be influenced strongly by a given society's moral understanding. Today, animal welfare is often seen as a 'public good' and that it matters to humans as well as to the animals themselves. A survey on the attitudes of EU25 citizens towards animal welfare (Eurobarometer, 2007), found that the protection of the welfare of farmed

animals was considered as ‘very important’ (average 7.8 score out of a maximum of 10), with citizens recognizing, at the same time, that further improvements need to be made in their own countries (77%). The development of a European-wide animal welfare framework law follows the social awareness and ethical concerns over the treatment of animals (e.g. various directives from the EU and conventions of the Council of Europe). One particularly relevant political achievement is the recent formal recognition of animals as sentient beings within the EU (Article 13 of the Treaty of Lisbon, 1st Dec 2009). However, the current challenge is to raise awareness about animal welfare in all members of society as a means to achieve the same vision for what is good animal welfare for producers, industry, consumers and society in general as a basis for industry to develop its production schemes (Algers, 2011).

In order to improve the welfare of animals, it is desirable to be able to measure it and benchmark it in some way. Welfare Quality (WQ), the largest ever EU-funded animal welfare research project, developed science-based methodologies for assessing farm animal welfare using mostly animal-based outcome criteria to measure the actual welfare status of animals. These measures included management factors and resources (so-called input factors) as these also affect animal welfare outcomes. Assessment protocols in WQ were developed for cattle, pigs and poultry and similar protocols are now under development for other species in other projects. The European Food Safety Authority (EFSA), that advises the EU Commission on risk assessment for animal health and welfare, has recently developed a system based on welfare indicators that include resources, management factors and animal-based welfare outcomes for assessing welfare on farms, at the abattoir and throughout their lives (EFSA 2012).

Parallel to these scientific advances in animal welfare, there has been an increasing body of legislation devoted to the protection of animals i.e. protecting their welfare. In Europe, the use of animals is strictly regulated, especially for food production and for scientific purposes (cf. Bonafos *et al.* 2010), but less so regarding companion and ‘sport’ animals. Despite harmonised rules for food producing animals, differences in interpretation and implementation can be seen between Member States. For example, in a review of the Transport Regulation (EC) No 1/2005, it was stated that ‘significant differences can be seen in the way Member States interpret some of the provisions of the Regulation’ (European Commission 2011). Lack of enforcement of EU legislation by the Member States is another common problem that can lead to a lack of compliance. The Animal Welfare Strategy adopted by the European Commission (2012) proposes drafting a simplified EU legislative framework with animal welfare principles for all animals, making use of science-based animal welfare indicators and establishing animal welfare reference centres, which, it hopes, might ultimately facilitate enforcement.

In summary, the scientific assessment of animal welfare is closely interrelated with ethical considerations on animal use and increasingly the subject of a corresponding legal framework. Thus the domain of animal welfare comprises three complementary dimensions: science, ethics and law, and training in all three elements would equip members of the veterinary profession to play an ever increasing role in these areas.

Animal Welfare in the context of European veterinary education

The Bologna Declaration

The Bologna Declaration in 1999 set the pace for a deep restructuring in higher education centred on transparency and convergence. These reforms would allow the EU “to become the most competitive and dynamic knowledge-based economy in the world” (European Council 2000). Amongst them, an overarching framework for qualifications was established (Bologna Process, 2005). This would, on the one hand, create an environment where undergraduate students are able to move freely across European schools (relying on exchange programmes like ERASMUS but also by personal means) looking for the best learning opportunities, and, on the other hand, promote a more readily recognition of university qualifications at a trans-national level (through the European Qualifications Framework³). This harmonized education would be particularly important from EU and OIE perspectives for national veterinary services to implement legislation and to make welfare judgements in an equivalent manner.

The European accreditation system of veterinary education

The Veterinary profession is unique in two ways: it is one of only seven professions that are conceded automatic recognition across the EU, and it has a well-established trans-European accreditation system of the quality of the teaching at the undergraduate level (run by the EAEVE and FVE). The accreditation of veterinary education in Europe focuses on the acquisition of adequate competences, particularly in relation to knowledge and skills. The minimum requirements are, in large measure, based on the subjects listed at the European Directive 2005/36/EC (7 September 2005), on the recognition of professional qualifications. The 2005 Directive only refers to: “Animal Ethology and Protection” within the realm of (Food) Animal Production but not in relation to other uses of animals. Similarly, the Directive includes “Professional Ethics” (*i.e.* Veterinary professional etiquette) and “Veterinary Legislation” (*i.e.* Jurisprudence) as basic competences for future veterinarians, but it is unclear if these subjects should include knowledge of the ethics and law that pertain specifically to animal welfare. Directive 2005/36/EC is currently under review, including the articles and annexes regarding the competence, knowledge, skills and minimum training requirements of veterinary surgeons.⁴ It should be noted that it is proposed that animal welfare be incorporated as a specified basic subject.

Another important aspect of the EAEVE-FVE evaluation system is the ‘essential skills’ that students should attain by the time they graduate. These are usually known as the

³ The European Qualifications Framework for life-long learning (EQF) was created to assist in understand, compare and recognise the national qualifications systems. Access through http://ec.europa.eu/eqf/home_en.htm

⁴ The proposed new version of the Directive 2005/36/EC is expected to include Animal Welfare as a specific veterinary basic subject. Additionally, a list of minimum competencies required for a Day One veterinary graduate is also being developed, which is set to highlight issues related to animal welfare.

‘Day One Skills’ or ‘Day One Competencies’. An essential point in developing and programming learning outcomes is the diversity of curricular approaches found in European veterinary programmes. Schools have the autonomy to organize the study programme in order to apply their educational objectives and to reflect broader cultural values and national needs. Such diversity is in itself good as it allows for development of subjects. However, at the same time, it represents a challenge in finding a consensus model curriculum for animal welfare education. Because diversity in educational strategies in the European veterinary schools is a positive development and should be respected, the WG decided to take an overall outcome-based approach to the teaching of animal welfare that will be supported by a model syllabus and the corresponding learning objectives. It will ultimately be up to each veterinary college to choose what it wants to incorporate into their curriculum and how those subjects are taught, bearing in mind that all veterinary education has to meet certain EU standards.

Veterinary Education in Animal Welfare

The need for veterinary undergraduate students to learn about animal welfare is virtually undisputed. The past decade has seen the development of numerous animal welfare programmes in veterinary schools across the western world (Hewson *et al.* 2005) and in Europe in particular (de Briyne 2008). Mapping of education in farm animal welfare in Europe and the new candidate countries has been one of the tasks in the on-going EU projects AWARE⁵ constructed the mapping via an extensive survey in 2012. All of the veterinary faculties that responded had some education in farm animal welfare and of these courses 46%, 44% and 4% were provided at the Bachelor, Masters and PhD levels respectively. The main focus of the course that contained farm animal welfare was ethology (31%), welfare assessment (26%) and legislation (13%). Other topics included stress physiology, animal ethics and courses dealing with various types of animal production. When this was analyzed according to the level of the education, the proportion of the course that dealt with applied ethology and welfare assessment was higher at MSc level compared with BSc and PhD levels. When faculties were grouped according to their location in Nordic, Baltic, North West Europe, Mediterranean, West Central Europe, East Central Europe and West and East Balkan regions, it was found that some topics were more common in some regions than others. For example, it was found that applied and basic ethology and animal ethics is most common in Northern and Western parts of Europe. It was observed that more than the average percentage of farm animal welfare teaching was found in North West Europe, Nordic and Mediterranean countries.

In 83% of cases, the course in which farm animal welfare was taught was compulsory. The average number of hours of farm animal welfare teaching in schools was between 10 and 30 hours with only four universities having more than 100 teaching hours dedicated to farm animal welfare. Class sizes ranged between 12 and 320 students and 81% of the

⁵ <http://www.aware-welfare.eu>

courses containing farm animal welfare were taught as a block, with several days of teaching in a row.

The predominant teaching method found in the AWARE survey was lecturing. A significantly increased level of on farm demonstration could be seen at Masters compared with the Bachelor level. Other types of teaching include case studies, group discussions, practical exercises and these accounted for 15-20% of the course time. The teaching methods at PhD level were rather different: lecturing and case studies were at an equal level at 34% followed by group discussion and on-farm demonstrations, both accounting for 20-21% of the course. Only in East Central Europe was lecturing, as a teaching method, less than 50% with an equal distribution of other teaching methods.

With regard to experience in teaching farm animal welfare, just over one third of the faculties (34%) had been teaching animal welfare for less than 5 years and just under one third had been teaching it for between 5 and 10 years. Thus is it a rather new discipline for most veterinary schools. Only 5% of the vet schools responding to the AWARE questionnaire had been teaching animal welfare for more than 20 years.

As part of the work for this report, the FVE WG carried out a separate and more targeted survey of European veterinary faculties. A questionnaire has also been recently completed in the USA by the American Veterinary Medical Association (AVMA), but the results of that are not yet available. To facilitate comparison, three of the questions in the FVE and the AVMA were similar. The survey was sent out by the WG in December 2012 to educators involved in animal welfare teaching to veterinary students in Europe and other interested persons. In total, 44 answers were received, representing 18 European countries. Three NGOs responded (*Eurogroup for Animals*, *The Dutch Society of the Protection of Animals* and *World Society for the Protection of Animals*).

Building on the AWARE original survey on the teaching of farm animal welfare, the aim of this survey was to give animal welfare teachers in veterinary schools the opportunity to give feedback on the content, design and feasibility of the FVE WG's proposed curriculum. This included giving us input on the draft syllabus, learning objectives and learning outcomes.

Compared with other contemporary issues associated with animals, animal welfare, together with food safety, was considered to be the most important in veterinary medical education (the others being conservation, intensive agriculture and biotechnology). The vast majority of responders (82%) thought that it was very important that there was a specific course called animal welfare. They also mentioned that, at present, students' knowledge of animal welfare at their own faculty was considered to be important to moderately important (average 2.32 on a scale of 1 very important – 5 not important).

Requesting them to comment on the proposed learning outcomes (and objectives), 93% agreed that the proposed list was complete and covered all the important competences. However, only 44% stated that they currently delivered these competences, but 73%

stated that they could reach them within the next five years which indicates that the proposed learning outcomes (and objectives) are acceptable and reachable.

Mention was made that some parts of the syllabus such as communication skills and assessing scientific data, although very important, are not specific to animal welfare training.

The main obstacles to strengthening animal welfare teaching included, in order of indicated importance: lack of space in the curriculum, difficulties in organising practical sessions, financial difficulties, lack of qualified teachers, and low priority within the faculty for animal welfare.

From the presented list of learning objectives, educators indicated that they taught the following, in order of most commonly cited: legal issues, animal handling and restraint, professional ethics, stress physiology, humane killing, ethology (>85%), animal ethics, pain control, and welfare assessment in farm animals (>80%). Only 58% referred to the promotion of positive animal welfare, and to the assessment and implementation of animal welfare records. Animal welfare assessment protocols in companion and laboratory animals were covered by 67% of the schools replying, while those of wild/zoo animals were covered in only 25%. In approximately 75% of schools, animal welfare was seen as a core subject, and so examinable, in other words, students could fail the subject in the same way as other core subjects.

All veterinary curricula are becoming increasingly crowded, leaving less room for teaching additional subjects. In this context there will be competition with other subjects (e.g. oncology and neurosurgery) that could compete with animal welfare (which often involves the acquisition of a different set of skills). Additionally, not all veterinary schools have faculty staff with specific training in animal welfare and investment could be considered as often insufficient. This might be one of the reasons for the considerable regional differences that were found in the AWARE survey (see above).

In order to meet societal and professional expectations we propose that “Day One Competencies” should include animal welfare science, as well as the associated elements of ethics and law.

SECTION 2: A MODEL CURRICULUM

Learning outcomes and Day One Competences in a veterinary educational programme

Learning outcomes are considered “fundamental building blocks of the Bologna educational reforms” (Adam 2006). An outcome-based curriculum works by putting the focus on the acquisition of competences and less on assigning a prescriptive list of instructional objectives (Harden 2002, Taylor 2009). The term competences, however, can have different meanings, depending of the context in which is being used (Bohlinger 2008), and needs to be clarified. Relying on the definitions provided in Annex I, we use the word competence to describe the proven ability to make use of personal knowledge, skills and attitudes in order to accomplish the tasks set out in the learning outcomes. Main (2010) describes a set of essential and desirable learning outcomes for animal welfare (science, ethics and law) for new veterinary graduates which we have used as a basic reference and built upon. The RCVS Day One Competences (2006) (and the equivalent EAEVE Manual of Standard Operating Procedures - Annex IV) were instrumental in our thinking.

The basic training of veterinary students has to result in Day One Competences that enable new veterinary graduates to fulfil their role as primary advisers on animal welfare across all contexts of animal use of the commonly used animal species. Of course one cannot expect all veterinary graduates to be expert on Day 1, so it is an objective that such skills are acquired over a relatively short period of time. The WG has tried to produce a clear and broad list of learning outcomes for animal welfare that could be readily used by veterinary schools at the European level. Learning outcomes for Day One veterinary graduates in respect of animal welfare related competencies (see also Table Day One Competences shorter version) include being able to do the following.

1. Appraise different concepts as well as analytical frameworks of animal welfare and how they relate to practice and to the context in which they are set.
2. Apply sound principles to objectively evaluate the welfare status of animals and to recognise good and poor welfare.
3. Participate in animal welfare assessment, monitoring and auditing with the aims of improving the physical and mental health of animals.
4. Formulate an informed, science-based, view on animal welfare matters and communicate effectively with those involved in keeping animals.
5. Appraise the social context and participate in societal debates about animal welfare and ethics.
6. Retrieve up-to-date and reliable information regarding local, national and international animal welfare regulations/standards in order to describe humane methods for animal keeping, transport and killing (including slaughter).

Many of these requirements tie in with the more traditional core Day One Competencies at graduation, particularly clinical competence, and so should not be seen as unique and requiring special coursework, although some will. Moreover, some of the learning outcomes suggested above will complement other competencies e.g. holding a scientific evidence based position, recognition of strong and weak arguments, provision of advice in any public debate, and the One-Health Concept - recognising the close link between the health and welfare of both humans as animals and the environment.

Learning objectives and a Framework for a syllabus

The learning outcomes outlined above in the form of Day One Competences represent the core competences that students should have as a result of the animal welfare learning activities. These core competences can be translated into a set of more detailed learning objectives which will help educators formulate their curricular programmes. Together with these objectives, a model syllabus is proposed that could be used to help design a curriculum in animal welfare. However, the suggested syllabus should not be seen as a prescriptive set of learning contents which has to be followed.

Table 1: Model syllabus and the corresponding learning objectives in animal welfare education as well as their relation to the Day One Competences. The verbs are used in accordance to Kennedy et al. 2006.

Syllabus	Learning Objectives <i>(being able to...)</i>	Day One Competences
<p>1. Animal Welfare Concepts: e.g. Biological functioning (fitness); ‘natural living’; emotional (affective) states</p> <p>Analytical frameworks: e.g. Five Freedoms, Three Rs; Concept of Quality of a Life, Ethical Matrix</p>	<ol style="list-style-type: none"> 1. Define animal welfare concepts 2. Recognise different welfare concepts and how they are used 3. Describe quality of life in a continuum between negative and positive welfare and overall balance 4. Analyse the scientific bases as well as the value judgements underlying each concept 5. Employ concepts in practice 	<ol style="list-style-type: none"> 1. Appraise concepts and frameworks of animal welfare
<p>2. Biological functioning</p> <p>Adaptive capacity</p> <p>Motivation and cognition</p> <p>Sentience (pain, emotions)</p> <p>Qualitative/quantitative assessment of internal states</p> <p>Stress (distress, eustress i.e. stressors to which an animal can adapt or cope)</p> <p>Behaviour</p> <p>Ethological methods</p> <p>Objective observation and recording</p> <p>Genetic/environmental interactions</p>	<ol style="list-style-type: none"> 6. Recognise species-specific behaviour at the individual and at the group level, and influence of environment and early experiences 7. Define homeostasis/allostasis 8. Distinguish between normal and abnormal behaviour 9. Describe interactions between genetics and environment 10. Appraise animals’ environmental ‘needs/wants’ and consequences of not providing them 11. Recognise the role of productivity in assessment 	<ol style="list-style-type: none"> 2. Evaluate the biological basis of welfare requirements
<p>3. Welfare Assessment in Practice</p> <p>Welfare records, protocols and assurance programmes</p> <p>Techniques for welfare assessment</p> <p>Risk assessment methodology for animal welfare</p> <p>Housing and Husbandry (including Handling and restraining of animals)</p> <p>Transport</p>	<ol style="list-style-type: none"> 12. Outline the functioning of scoring systems, protocols and assurance programmes 13. Identify physiological, production and behavioural measures of welfare 14. Determine welfare hazards, exposures, consequences and risk 15. Implement basic AW records 16. Determine the welfare impact in the 	<ol style="list-style-type: none"> 3. Apply an animal welfare assessment to various categories of animals

<p>Moving animals between environments (e.g. showing, sport and competition, conservation)</p> <p>Humane slaughter and killing</p>	<p>quality of animal products</p>	
<p>4. Personal and Professional Competences / Attributes</p> <p>Validity of scientific data</p> <p>Recognition of different beliefs, ethical dilemmas and moral conflicts</p> <p>Communication skills</p> <p>Professional behaviour in clinical decision making (e.g. client and animal “best interests”)</p> <p>Objective advice for responsible stewardship and ownership</p> <p>Some understanding of the philosophy of science and epistemology</p>	<p>17. Retrieve and make use of relevant academic literature</p> <p>18. Reflect on own emotions and moral intuitions regarding animal welfare (e.g. empathy)</p> <p>19. Differentiate between personal and professional standpoints</p> <p>20. Appraise regulatory requirements and ethical duties</p> <p>21. Promote positive welfare and minimise negative welfare (e.g. pain management)</p> <p>22. Recognise the role as educators as well as communicators</p> <p>23. Communicate relevant information effectively and mediating interests</p> <p>24.</p>	<p>4. Formulate and communicate an informed view on animal welfare matters</p>
<p>5. Human-animal relationships</p> <p>Concept of duty of care</p> <p>Human wellbeing and animal welfare (e.g. links between animal and human abuse, burnout, suicide)</p> <p>Human-Animal bond</p> <p>Reasons for killing (e.g. slaughter euthanasia, culling, population control)</p> <p>Moral reasoning and ethical theories</p> <p>Political contexts</p> <p>Cultural differences</p> <p>Influence of economics</p>	<p>25. Recognise the diversity of functions and uses of animals within society</p> <p>26. Describe and debate the different ethical views on animals.</p> <p>27. Identify ethical dilemmas and deal with human wellbeing within the profession</p> <p>28. Examine the underlying values that justify the rules and norms regarding animal welfare and protection</p> <p>29. Recognise and report possible abuse of animals;</p>	<p>5. Place animal welfare in a societal and ethical contexts</p>

<p>6. Welfare Legislation, regulations and norms</p> <p>Animal welfare regulations (regional, national, European and global)</p> <p>Limitations of legislation</p> <p>Professional standards</p> <p>Veterinary roles as an enforcement officer and expert witness</p> <p>Veterinary certification requirements</p>	<p>30. Identify national, international ,EU animal welfare legislation and guidelines, and OIE standards</p> <p>31. Recognise animal welfare implications on trade of animals and products</p> <p>32. Employ procedural guidelines, and codes of practice regarding animal welfare</p> <p>33. Distinguish between formal (legal) vs. ethical responsibilities regarding the welfare of animals</p> <p>34. Apply ‘private⁶’ animal welfare standards</p> <p>35. Write reports and produce satisfactory certificates</p>	<p>6. Place animal welfare in a legal and professional contexts</p>
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⁶ Private animal welfare standards are non-legislative standards such as standards set by assurance Schemes, retailers or voluntary standards developed by not-governmental organisations

SECTION 3: DELIVERING A COURSE IN ANIMAL WELFARE

The subject in terms of teaching

A key educational aim for the veterinary schools is to produce a graduate who is educated, trained and competent in the topics of animal welfare science, as well as the wider ethical issues involving the use of animals by society. The FVE strategy for 2011-2015 states that veterinarians have professional and ethical responsibilities to use their scientific knowledge and skills for the benefit of animal welfare. All veterinarians should be able to educate, inform and influence animal owners, caretakers, handlers, and policy makers to protect and improve animal welfare. Veterinarians must not only work to implement existing animal welfare legislation and other guidance determining standards, but must also contribute to making sure these standards are continually improved. Welfare research and subject development are, therefore, seen as important aims in veterinary education as with other key subjects such as animal health and public health. An appreciation of the principles involved is essential so that students should be able to apply these underpinning principles critically, and not simply memorise facts.

The science of animal welfare comprises several inter-related multidisciplinary areas that are already generic in existing veterinary science curricula. The fundamentals of an animal welfare syllabus are likely to be covered in traditional veterinary disciplines such as anatomy, physiology, animal husbandry, genetics, biochemistry, immunology, nutrition, pharmacology, pathology, clinical sciences, and it should be more a matter of extending the depth and breadth of these traditional sciences rather developing something completely new.⁷ However, more recent developments will mean that contributions will also be needed from less traditional subjects such as animal behaviour, cognitive neurology, and biotechnology. The applied and clinical aspects of animal welfare, particularly in relation to producing a competent veterinary surgeon, will increasingly need to perform evidence based welfare assessments.

Ethical concepts and their application are again something fairly new, in veterinary education, as indeed was the case for human medicine a few years ago. It should be noted that this is not just about professional ethics (veterinary etiquette largely between members of a profession) but about the ethical issues arising from veterinary practice i.e. the relationship, obligations and duties to animals, clients, and to society in general and dealing with an ever changing moral status of animals. One cannot be a good clinician without being aware of the ethical issues in decision-making in practice. However, some recent studies have identified considerable differences in terms of European veterinary undergraduate teaching in animal welfare and ethics (de Briyne 2008, Magalhães-Sant'Ana *et al.* 2010) and revealing a predominance of legislative aspects and theoretical approaches. There are very few formal courses in veterinary ethics (or undergraduate textbooks for that matter) and much of the knowledge base resides outside veterinary

⁷ In the past 'new' subjects have had to be incorporated into the veterinary curriculum that posed far more of a challenge e.g. biochemistry in the 1940s, immunology in the 1960s, and molecular biology, pathology and genetics in the 1990s, and today the 'omics.

schools, e.g. in departments of human healthcare ethics and to some extent in departments that study the ethical issues involved in other areas such as biotechnology, research (especially laboratory animal based research), environment and agriculture. All of these potentially involve veterinary expertise and input.

Teaching within an existing framework

Veterinary schools have a variety of teaching strategies, for example programmes may be horizontally or vertically integrated, or both. Animal welfare and ethics are ideal subjects to be taught in any system as they are broad based and relevant to nearly all subjects. Our survey showed that lack of space in the curriculum was a major obstacle in strengthening animal welfare teaching in the curriculum. However, animal welfare, is highly adaptable to being taught and so should be easily incorporated into an existing curriculum, Furthermore, it has the added value of being able to stimulate and educate students to think about the ethical and legal issues in vocational and practical ways. It can also be used to teach students to communicate effectively and to recognise poor arguments, rhetoric, faulty logic, misconceptions, and so on.

The veterinary course, given the standard ~5 year programme, is very much under pressure to incorporate more recent areas of research (e.g. biotechnology, molecular and stem cell therapies, 'omics). Nevertheless, it is increasingly important, from a public perspective, that the profession is seen to take animal welfare seriously and for that reason it should be seen as a core subject.

How many ECTS credits should be assigned to animal welfare? Which Day One Competences should be addressed in pre-clinical years and which in the clinical years? Given the variety of teaching strategies across Europe, no one-fit-all answer can be given. Animal welfare teaching should be delivered in such a way that the study subject is clearly identifiable on its own right while also being taught in a holistic way integrated throughout the veterinary course. If more guidance is needed on assigning credits and placing animal welfare in the different teaching programmes applied in Europe, this should be addressed in a follow-up paper.

Keeping up-to-date is a different issue that has to be addressed through post-graduate educational strategies. Again, if more guidance is needed on this, this should be addressed in a follow-up paper.

Should it be examined?

If a subject is deemed to be important enough then it becomes part of the core curriculum in an undergraduate course that leads to a professional qualification i.e. essential knowledge that is examined, with the implication that students who fail such core subjects will ultimately not graduate. In our survey, roughly 75% of the faculties who responded indicated that animal welfare was a core subject in their faculty. A subject in

the core curriculum, by inference therefore, is a statement to the outside world of how seriously that subject is taken by the profession.

We strongly suggest that animal welfare should be part of any core curriculum and be examined. It is up to the individual veterinary school to decide how and when to do it, as it will be closely related to how the courses are taught. The basic knowledge could be integrated with the pre-clinical examinations in a horizontal course, or as part of a problem based learning in a vertically integrated course. Whatever system is used, as with other Day One Competencies, it should be reliable, robust and defensible. The learning objectives in the Table will form a basis for these core competencies.

Training the teachers

As with any new subject the start-up period is difficult, how does one find the teachers before it is self-reliant and self-sustaining? Given the multi-disciplinary nature of the subject and as, in other areas of the curriculum, a collaborative approach across disciplines based on expertise is needed. This expertise may or may not come from within the veterinary faculty and the contribution of ethicists, animal scientists or other disciplines would be beneficial. There may also be a need for extra-mural courses for staff. For animal welfare science there are already many departments within, though mainly outside, veterinary schools to help and the combination of ethology with veterinary science and this makes for a particularly comprehensive approach. Ultimately, it may be the veterinarians that contribute to the training of on-farm and other welfare assessors but at the moment there are many who do not have a veterinary qualification carrying out on-farm assessments. In teaching ethics and law some veterinary departments have made links with academic departments of Applied Ethics, Philosophy and Law to help provide the basics. Involving existing clinical staff members as tutors, can be a way of mutual learning and sharing experiences, making for better student involvement and participation and helping to advance the subject in its own right.

Resources

Several (electronic) tools have been developed to enhance the teaching in animal welfare which could be widely used by veterinary educators. The following resources can be used⁸ to facilitate this model curriculum: (WSPA (2012) Concepts in Animal Welfare, De Boo and Knight (2005), Animal Ethics Dilemma (2007), Hanlon *et al.* (2007); Animal Welfare Judging and Assessment Competition (2005), Siegford *et al.* (2005), Ethical Matrix, etc

Another list of such resources is being compiled by the AVMA (ref to follow) and also exists in the Virtual Animal Welfare library online (2011).

The AWARE Project also has resources available to facilitate the establishment of education **partnerships** to facilitate the exchanges of lecturers and students via twinning.

⁸ Please note that this list is not exhaustive nor have any of these resources been evaluated or accredited by the working group.

In addition AWARE provides '**Lecturer's helping lecturers**' workshops with practical advice on teaching and developing courses in farm animal welfare (AWARE 2011).

Animal Welfare Research

Actively encouraging research into animal welfare is to be strongly encouraged. Quality animal welfare research attracts both students and top quality staff. Teachers, who are active researchers, provide a good role-model and may help to encourage vet students to acquaint themselves with research skills and subject development. In addition, it allows to increase the prestige of the university, demonstrates veterinary involvement in the area and its development, and in association with private industry can produce promising spin offs with bright ideas for the next generation of products and services.

Post-graduate studies

It should be noted that a lack of welfare teachers was not seen as the main obstacle in providing a course in animal welfare. Nevertheless, the development of a post-graduate college in animal welfare (European College of Animal Welfare and Behavioural Medicine (ECAWBM) specialising in animal welfare will, in the future, provide a source of animal welfare teachers and researchers.⁹ The work of this new College depends on creating suitable positions for its study such as residency programmes.

Similar challenges for teaching of animal welfare arise at the post-graduate level. It would be important to establish a list of suitable competences in terms of animal welfare science, ethics and law which students would need to acquire during their postgraduate studies as a basis for later study. This exercise should bear in mind the recent harmonization of the framework of qualifications for the European Higher Education Area (Bologna Process).

All veterinary practitioners should continue to learn and improve their practice through continuous professional development programmes (CPD). CPD is obligatory in many European countries in order for the veterinary surgeon to maintain its degree, while it is strongly recommended in some other countries. In addition, CPD forms the basis of ensuring, for the public, the quality of care provided. Animal Welfare, like other relatively young scientific disciplines, is developing rapidly. Therefore it is of utmost importance to incorporate advances in welfare and law into these CPD programmes. Such programmes should also focus on ethical issues and on the ability to communicate with clients and the public.

Some countries also provide educational programmes leading to a title given for a specialized or acknowledged practitioner eg. RCVS Certificates or German Fachtierarzt degrees. These programs should incorporate some aspects of advances in welfare, ethics and law.

RECOMMENDATIONS

1. The FVE and EAEVE should actively encourage all European schools to implement these Day One Competences and the corresponding learning objectives, and to have them incorporated and evaluated through the EAEVE/FVE accreditation system of veterinary schools.
2. European veterinary schools should ensure adequate time, staff and practical sessions for teaching animal welfare science, ethics and law.
3. Animal welfare science, ethics and law teaching should be delivered in such a way that the study subject is clearly identifiable in its own right, while being integrated throughout the veterinary course.
4. Animal Welfare science, ethics and law should be a core subject, and examinable with the same pass/fail criteria as other core subjects.
5. European veterinary schools should encourage cutting edge animal welfare research as this will attract both students and top quality staff.
6. CPD providers should incorporate advances in welfare, ethics and law into their programmes through the principles of life-long learning
7. All staff, as role models, should be continually updated in Animal Welfare.

Future work:

Guidance on assigning ETS credits and assessing animal welfare programmes in different teaching programmes could be addressed in a follow-up paper.

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Annex I: Descriptors of the terms used Table summarizes some of the most important concepts that are relevant to education in animal welfare. These definitions are based on a number of references and are not intended to be definitive. However, there can be some degree of overlapping between the terms and language may confuse their interpretation.

Syllabus	The learning contents of a curricular course (Leinster 2005)
Curriculum	<p>A detailed schedule of the teaching and learning opportunities that will be provided. This includes the core curriculum and the student-selected components (GMC 2003)</p> <p>Curriculum encompasses learning methods, assessment methods, resources and timetabling in addition to content (Leinster 2005)</p>
Integrated teaching	A system where the clinical and basic sciences are taught and learned together. This allows students to see how scientific knowledge and clinical experience are combined to support good medical/' <i>veterinary</i> ' practice. (GMC 2003)
Learning Objectives	Objectives indicate the general content, direction and intentions behind the module from the designer/teacher viewpoint (Adam 2006)
Learning Outcomes	<p>Statements of what a learner knows, understands and is able to do on completion of a learning process and are defined in terms of knowledge, skills and competence (EC 2006)</p> <p>Learning outcomes are concerned with the achievements of the learner rather than the intentions of the teacher (Adam 2006)</p>
Competence	<p>The proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and/or personal development. (EC 2006)</p> <p>Competence is the ability to carry out an activity effectively, safely, and efficiently. (Welsh <i>et al.</i> 2009)</p> <p>Overarching term which encompasses the following abilities: knowledge, skills, attitudes and aptitudes. (OIE 2012)</p> <p>The ability to perform the roles and tasks required by one's job to the expected standard (Eraut & Boulay, 2001 in RCVS Day 1 Comp.)</p>
Knowledge	The body of facts, principles, theories and practices that are related to a field of study or work; knowledge is described as theoretical and/or factual and is the outcome of the assimilation of information through learning (EC 2006)

	Theoretical or factual cognitive abilities, i.e. mental skills (OIE 2012)
Skill	The ability to apply knowledge and use know-how to complete tasks and solve problems; skills are described as cognitive (involving the use of logical, intuitive and creative thinking), or practical, (involving manual dexterity and the use of methods, materials, tools and instruments) (EC 2006) Ability to perform specific tasks (OIE 2012)
Attitude	Affective abilities, meaning feelings and emotions (OIE 2012)
Aptitude	A student's natural ability, talent, or capacity for learning (OIE 2012)

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