

The equine veterinarian: past, present and prospects of a profession.

De paardendierenarts:
verleden, heden en toekomst
van een beroep.

(met een samenvatting in het Nederlands)

Proefschrift

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Chapter **1**

General introduction

The horse at heart

Equitation is becoming more and more popular in western countries. Leisure horses populate former agricultural lands and the number of professional training stables, stud farms and riding schools has increased dramatically in recent years. In the Netherlands the annual turnover in the equine industry is estimated at 2 billion euros and is still growing. The horse has conquered an important position in the hearts and minds of many young girls and (to a lesser extent) boys, but also older age groups are being "infected by the equine virus". The fascination for the horse is certainly not limited to people with an equine or agricultural background, or to specific social classes. The equine community encompasses a large fraction of the total population and consists of spectators, horse owners, riders, drivers, grooms, trainers, sponsors, professional or leisure sportsmen etc. and also includes veterinarians.

Many of these veterinarians participate in equitation in one way or another and for many their love for the horse was the reason to start a veterinary career. However, love is blind and may be a bad counsellor; proper career choices should ideally have a more rational basis. Although there is the rather romantic Herriot-like perception of the equine vet by the general public on the one hand and there are anecdotal data on long working hours, occupational disability and frequent law suits on the other, little is known on the current position of the equine veterinarian with respect to his or her working conditions, the economic viability of the job and ultimately on the degree of job satisfaction. This makes a rational choice for the profession difficult and also hampers the identification of bottlenecks or targets for improvement for the professional organisations or regulatory bodies. The aim of this study was to analyse the current position of equine veterinarians in the Netherlands as a basis for the timely recognition of trends and developments that may urge a proactive stance of the profession or parts thereof in order to avoid unwanted developments and to guide the profession in the best possible way.

The current position of the equine veterinarian

Relations in human healthcare can be described by the so-called triangular model, which describes a series of interactions between the three main actors, being: citizens (patients), third parties (public sector and insurance agencies) and the providers (hospitals and the primary care sector) (Cristiansen 2002). In this model there are monetary flows from patients to the third parties (and to a lesser extent directly to the providers) and from the third parties to the providers, and a service flow from the providers to the patients.

In equine veterinary care the relationships and interactions are more complicated since the patient, i.e. the horse, has an owner who is responsible for it and decides whether or not equine veterinary care will be provided (Figure 1).

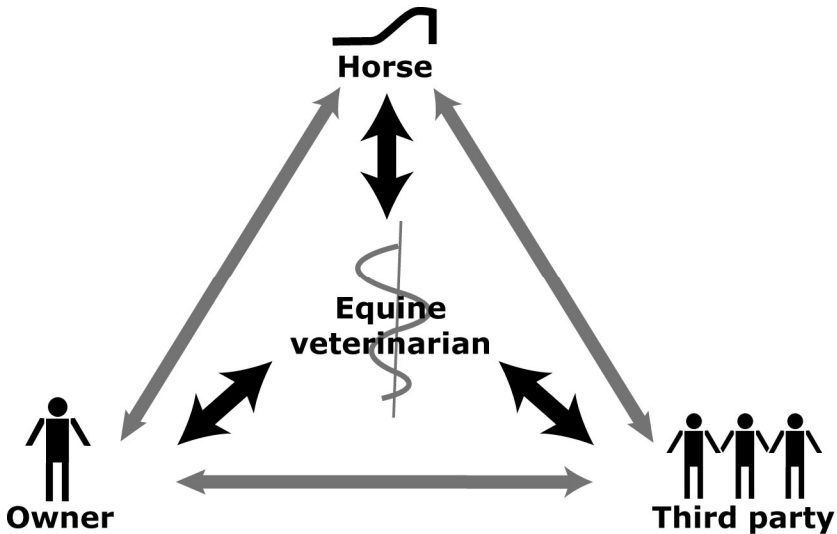


Figure 1.
Triangular model equine healthcare.

In line with this diagram, this thesis puts the equine vet in the centre and evaluates his/her relationship with the horse, the horse owner and third parties. The reciprocal interactions between third party and owners, third party and the horse and the horse and owner are left untreated, unless they are of importance for the interaction with the equine vet. The thesis starts with the historical perspective, then goes into detail in various chapters on the current position of the equine vet and ends with a synopsis from which the future perspective of the equine veterinary profession emerges.

History

The second chapter of this thesis describes the heyday of the former famous equine "horse masters", who were mainly associated with the cavalry, the decline of specific equine knowledge during the era of rapid mechanisation, and the revival of the horse vet as the modern equine veterinarian and equine specialist treating leisure and sport horses.

Supply and demand

Chapter three provides more detailed information concerning the present-day demand for equine veterinary care and the actual situation of the contemporary equine vet in terms of workload, hours spent “hands on” with the horse, relative importance of the various organ systems and disciplines, and specific interventions. The role and specific activities of the registered equine veterinary specialist is given special attention.

Economic viability

In equine veterinary care there is no large third party as a middleman between the supply side and the demand side. Only a limited number of horses are insured for equine healthcare, which means that there is usually a direct financial relationship between the owner of the horse and the equine vet. Thus, apart from professional competence, the equine veterinary practitioner also has to have commercial qualities as an entrepreneur who has to earn a living for himself and his or her staff. Chapter four addresses the economic viability of the equine veterinary activities, thereby focussing on the large differences between the types of practices where equine vets work. Revenues obtained from equine work are expressed in various benchmarks and compared between equine and mixed practices and between the six economically best and worst performing practices.

Quality of equine veterinary care

The quality of healthcare, which includes the quality of communication with owners and third parties and client satisfaction, are topics of considerable current interest in both human and veterinary health care. Crucial in this discussion is a proper definition of the quality of care. Quality of equine veterinary care in this study was measured using a conceptual framework designed to describe the quality of human healthcare (Campbell et al 2000) that differentiates between the structure of the care system, the actual process of giving care, and the effect of the system on an individual (outcome). In chapter five this framework is applied to an analysis of court cases filed against equine practitioners as a yardstick for dissatisfaction with the work or attitude of the equine vet by either the owner or regulating authorities.

The degree and reasons of client dissatisfaction may be a good measure to assess the quality of the care given, but it does not give information whether the offer of care meets demand in a sufficient and satisfying way. Needs and demands vary widely depending on the type of client and the horse involved and it is impossible to investigate demands and the degree to which those demands are met for all possible subpopulations of end users of equine veterinary care. Therefore in chapter six the focus is on the group that can probably be seen as the most challenging of them all, the top segment of the most important equestrian disciplines in the Netherlands.

Here the same conceptual framework of quality of care is applied to equine veterinary care as perceived by three relevant parties in this top segment of equestrian activities: the riders, the national coaches and the national team vets.

Legislation

Practicing (equine) veterinary medicine is regulated by law, as is the use of veterinary medicinal products. There are frequent complaints from the field that the availability of equine veterinary medicinal products is insufficient and at times inappropriate. Chapter seven is a study on the actual availability and the related proper and improper use of medicinal products by the equine practitioner in the Netherlands. The study substantiates the generally sensed discrepancies or right-out contradictions between the availability of veterinary medicinal products, the legislation in force, the code of Good Veterinary Practice (GVP) and the reality of day-to-day practice.

Personal health and job satisfaction

Equine veterinary work is said to be physically demanding and predisposing for diseases and injuries. How do equine practitioners cope with the sometimes heavy physical and emotional demands posed by owners, patients and third parties, more often than not complicated by financial uncertainties? Chapter eight assesses the current state of affair in equine veterinary practice with respect to physical and mental health and job satisfaction, with some focus on gender issues.

Prospects of equine veterinary practice

Finally, in chapter nine, a picture of the future equine veterinarian is given based on the observations made and trends signalled in the preceding chapters. It is discussed how the relationship of the equine veterinarian with the horse, the owner and other parties might change over time. Further, suggestions are given how the equine veterinary profession could best prepare itself for the upcoming and unavoidable changes in the smoothest possible way to the benefit of the horse, owner and the entire equine veterinary profession.

Chapter **2**

The emancipation of the equine veterinary practitioner in the Netherlands

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Introduction

The development of a profession is a dynamic process. According to sociological theories a profession is only established if three processes have taken place: 1) differentiation, 2) legitimation, 3) institutionalisation. With respect to the veterinary profession these processes have taken place and have given the veterinarian his present status (Koolmees 1992, 2000, Offringa 1983). Differentiation and specialisation within the veterinary profession are ongoing processes and in modern western society the equine veterinary practitioner is trying to define his own position within the total scope of veterinary medicine. In this paper the development from the ancient trade of "paardenmeester" (horse master) in the seventeenth century to the profession of equine veterinary practitioner today is described. In addition, the changing role of the horse and the related development of the market for equine veterinary services in the Netherlands are evaluated.

The treatment of horses in the seventeenth and eighteenth century

One of the first comprehensive studies on the treatment of horses in the Netherlands was written by Pieter van Naaldwijck in the seventeenth century. Pieter van Naaldwijck studied philosophy, theology and medicine from 1614 until 1624 at Leyden University. During his study he already showed much interest in hippiatric writings. In 1624 he left for Gothenburg (Sweden) as a general physician, but at the same time became a manager of a brick factory. As a physician, he was also responsible for the horses used in the factory and of those needed for the construction of the harbour of Gothenburg. In 1631 he published a book in two volumes called *Libri duo Philippicorum, sive de equorum natura, electione, educatione, disciplina et curatione* [The horse friend: about the nature-, selection-, education-, training- and treatment of the horse] (van Naaldwijck 1631). It was considered to be one of the first scientific books on horses, based on own experiences and therapies, combined with information from ancient authors. In practice, however, most horses in his days were treated by empirically "educated" laymen. Farriers played an important role, as testified by the publication of Pieter Almanus van Cour, farrier and self proclaimed "equine veterinarian" from 1688: *Toevlugt of Heylsame Remedien voor alderhande Sieckten en Accidenten die de Paerden soude kunnen overkoomen* [Cures and remedies for all kinds of diseases and injuries that might affect horses] (van Cour 1688). In 1769 the zoologist Johannes Le Francq van Berkhey published *De Natuurlijke Historie van Holland* (The natural history of Holland) in nine parts. Part four was mainly dedicated to the horse, indicating the importance of this species for the Dutch society at that moment. According to Le Francq van Berkhey, knowledge on health, reproduction, diseases and injuries of horses almost equalled the knowledge on human medicine at that time. His work shows that the small amount of scientific knowledge that was

available on equine diseases and equitation was disseminated all over Europe and was also applied in daily life. However, he also speaks highly about farriers who, thanks to their expertise, empirical knowledge and "clinical look", sometimes obtained the status of "equine professor" amongst riding masters, stable owners and younger farriers (Le Francq van Berkhey 1769). Other contributors to equine veterinary care were so-called "paardenmeesters" (horse masters), who were mainly educated in the army and associated with the cavalry, farmers, stallion owners, castrators and also inspectors at equine markets who had to look for possible defects of horses offered for sale and in fact performed the eighteenth century version of the pre-purchase examination.

Treating horses for the military

From 1792 onward the horse masters were appointed to take care of the army's sick horses. They had the rank of non-commissioned officer. Only in 1807 the first equine veterinary officer in The Netherlands was appointed by Louis Napoleon, a brother of the French emperor, who had installed him on the Dutch throne (Steltenpool 1996). When Louis Napoleon was confronted with a shortage of veterinarians in the northern part of his kingdom, he ordered the foundation of the so-called "Leidse Commissie" (Leyden committee), a "scientific" committee that assessed potential, experienced, "self made" veterinarians who had studied abroad, and appointed them as first and second class veterinarians (Offringa 1971, Wester 1939). After the French occupation and the battle at Waterloo, the veterinary care made part of the general medical care of the army and all potential army veterinarians had to be examined by the "Leidse Commissie". However, King William I insisted on an independent veterinary school for the education of skilled veterinarians, located in a city with a university that could provide a more scientific background. In 1821, the "Rijksveeartsenijschool" (State Veterinary School) was opened in Utrecht, funded by the Agricultural Fund. The first veterinarians left this school with a diploma in 1826 as veterinarians first or second class and the "Leidse Commissie" resigned. The first vets had a hard time since their practical skills were limited; they faced contagious pleuropneumonia and rinderpest and had no remedies. Their practical skills were limited due to the lack of patients and experienced veterinarians as teachers at the "Rijksveeartsenijschool". Farmers and horse owners were used to empirical medicine and quackery as practiced by obstetricians, farriers, castrators and stable masters. The army however, did acknowledge the importance of these scientifically educated veterinarians, as did the government. After the secession of Belgium in 1830, many foreign-educated French speaking vets left the army, and, in order to maintain a fair amount of equine army vets, the army started to pay for the education of veterinarians (Offringa 1971, Wester 1939). For the acquisition of army horses ("remonteren") by the government strict rules were applied with initially only an advisory role for the equine veterinarian, but later on the first class equine veterinarians were given a more

prominent role. The acquisition committee, for instance for artillery horses, consisted of a high-ranking cavalry officer, an artillery captain and an equine veterinarian first class, who was appointed by the ministry of war and nominated by the inspector of the artillery in conjunction with the inspector of the health services (Schimmel *et al.* 1895). After leaving the "Rijksveeartsenijschool", students who had been paid for by the Agricultural Fund were appointed by this fund that paid a part of their wages. They were not allowed to practice for themselves, but were sent to the countryside to combat contagious diseases. The students financed by the Ministry of War, however, had to serve the army for ten years, were well-paid and were also allowed to practice veterinary medicine privately from 1841 onwards. Equine veterinarians thus became the new elite and many potential students applied. As a result of this, there was a selection procedure that involved exams on topics including French, German, English, Latin and Greek. It may not be surprising that three future teachers of the "Rijksveeartsenijschool" started their careers as equine veterinarians. Although the equine vets had a certain status, the veterinary profession in general was not held in high esteem. Due to shortages of the Agricultural Fund, the number of students decreased and the average income of veterinarians was low, which was of course an uninviting prospect for the students. These were mainly children of teachers, veterinarians, government officials and farmers. Children of the higher social classes were trained as naval officers, general physicians, or surgeons, educations with a more prosperous future (Offringa 1983, Wester 1939).

Equine veterinary care, 1914 – 1945

The number of horses in the Netherlands was very high at the beginning of the First World War (Figure 1). In August 1914 the First World War broke out and many veterinary students were called into active service (Offringa 1971). The Netherlands remained neutral during the entire war, but the armed forces remained mobilised throughout and during the war about 100 military equine veterinarians were active, while during peace time only 28 used to be employed. On March 2nd 1918 the "Rijksveeartsenijschool" became an institution of higher education called the "Veeartsenijkundige Hoogeschool" (Veterinary College) by Royal Decree. Only seven years later, in 1925, the "Veeartsenijkundige Hoogeschool" lost its independent status and became the Veterinary Faculty of Utrecht University (founded in 1636), mainly for economical reasons (Offringa 1981, Offringa 1971, Wester 1939).

Common equine veterinary skills at the end of the nineteenth and beginning of the twentieth century and important equine diseases that give an idea of the state of the art in those days include: hoof diseases (Hartog 1912a), diagnosis of podotrochleosis, neurectomy, embryotomy, influenza, malleus (glanders), scabies, exanthema coitale, intoxication by fungi, botulism, strangles, abortion, bacteriology and parasitology. Disinfection of wounds and bandages with iodine became standard and general anaesthesia of horses with chloral hydrate and local anaesthesia with

cocaine, later supplemented by regional nerve blocking with novocaine, enhanced the development of surgery. Radiography, invented in 1895, was soon to be used in veterinary medicine as well, but it took until after the Second World War before it was used in horses in the Netherlands (Frederik and Zantinga 1960). In 1898, torsion of the colon was diagnosed rectally and treated by turning over the horse. For the first time antipyretic agents like acetyl salicylic acid were used (Offringa 1981, Wester 1939).

At the beginning of the twentieth century the first "chemotherapeutics", starting with salversan and neosalversan (1910), were introduced. The "travail bascule" was invented, enabling new surgical techniques for instance for the treatment of laryngeal hemiplegia (Hartog 1912b, Hartog and Loran 1919), and crib-biting (Hartog 1921). Also, strongyloides infestation was identified in faecal samples at the Veterinary Faculty in Utrecht by J. Wester (*strongyloides Westeri*) and laminitis and haemoglobinuria were described as sequels to the feeding of beetroots.

At this time, the veterinary education and profession in the Netherlands started to reach a level that, for the first time, met international standards. The World Veterinary Association met in the Netherlands for the first time in 1909. Veterinary science was flourishing, cattle breeding, animal production and meat and milk hygiene asked for more veterinarians. This increased demand led to a shortage of veterinarians and gave these a position where they could claim a better social and financial position. Local governments were paying extra allowances for veterinarians settling in their province (Wester 1939). Agriculture was booming business, but with the increasing motorisation of traffic after the invention of the combustion engine, horses became less frequent in the cities and on the roads.

The position of the veterinarian was secured and acknowledged through legislation on veterinary education (1874, 1917), meat inspection (1919) and by the act on livestock (1870, 1907, 1920). Finally, the "empirical medicine" as practiced by laymen was losing ground; this was in part also due to the work of the "Maatschappij ter Bevordering van de Veeartsenijkunde en Veeteelt in Nederland" [Society for the improvement of veterinary medicine and livestock breeding in the Netherlands], established in 1862, and to the publication of the "Veeartsenijkundig Magazijn" [Veterinary Magazine, from 1827 - 1847] and the "Tijdschrift voor Veeartsenijkunde en Veeteelt" [Journal of Veterinary Medicine and Livestock Breeding, from 1863 - 1915]. Even though motorised transport increased between the two World Wars, the number of equine veterinarians increased from 55 in 1926 to 87 in 1940 (Offringa 1981). These were all male vets because at first all students at the veterinary faculty were of the male gender. However, in 1925 the first female student (who would not pursue an equine career) entered the veterinary curriculum (Offringa 1981).

The number of horses used in agriculture decreased between 1921 and 1937, but increased again in the years thereafter. The use of sport horses became more common, though still limited to the upper class and hence absolute numbers were limited. The capitulation of the Netherlands in May 1940 and the mechanisation of

the armed forces when these were reconstituted after the end of the German occupation meant the end for the military veterinary services and thus for the military equine veterinarians (Mossel and Koolmees 2003).

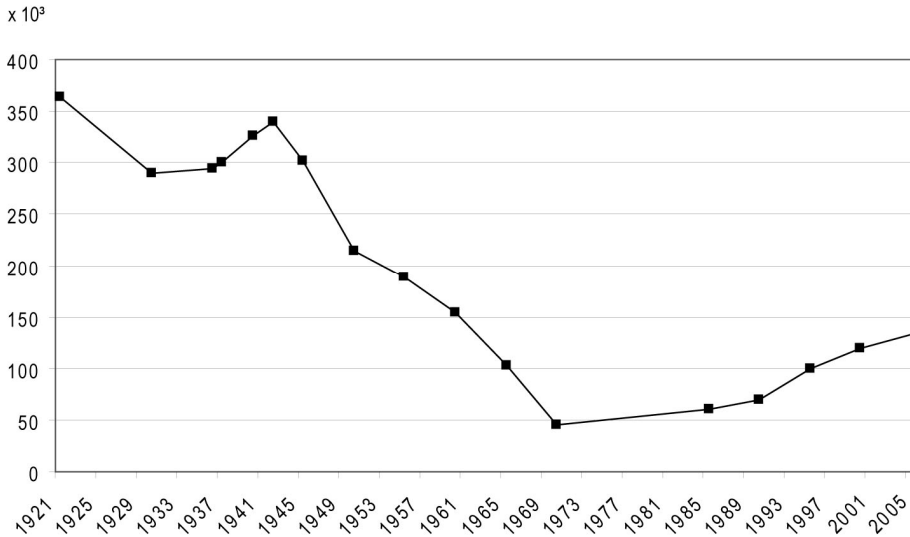


Figure 1. Officially registered horses in the Netherlands. (Offringa 1971, Offringa 1981, Statline 2008, PVE 2008). Numbers refer to horses officially registered for the military and on farms. At this moment (2008) the total number of horses in the Netherlands is estimated 440,000.

The post war period

Until the 1960s more cattle than horses were treated at the Veterinary Faculty due to the diminishing importance of the horse in agriculture, but the number of equine patients increased at the end of the sixties because of the upcoming equestrian sports and use of the horse for recreation (Figure 1) (Offringa 1981). From 1963 onwards the economy in the Netherlands started to flourish and, with the support of the Minister for Education Cals, plans to build a completely new veterinary faculty at another location could be made. The first clinic on the newly built university campus "De Uithof", east of Utrecht was the Institute for Reproduction and Obstetrics, which was officially opened in October 1967 by HRH Prince Bernhard. The clinic for General and Large Animal Surgery followed in 1968, Large Animal Medicine in 1969, and Companion Animals in 1970. The facilities were "state of the art" and unprecedented with respect to size and equipment. At that moment the dividing lines in the clinical

departments followed the disciplines, not the species. Only the clinic for Companion Animals encompassed all disciplines (except for reproduction and obstetrics). The three large animal departments all received horses. Frequently encountered patients were colic horses (Numans 1953), chronic respiratory diseases (heaves), metabolic problems such as hyperlipaemia and laminitis, horses with tetanus, and ataxia. Numbers of horses decreased until 1965, but increased after that to 2400 per year, enough for teaching and research purposes (Offringa 1981). New techniques were applied to horses such as epidural anaesthesia, caesarean section, taking of endometrial biopsies and uterine swabs, artificial insemination (started in 1970). Also, equine stud fertility management was introduced (van Leeuwen 1973, Offringa 1981). At the Large Animal Surgery department the caseload existed of colic surgeries and other soft tissue surgeries such as operations for crib-biting, laryngeal hemiplegia, cryptorchidectomy, dental and other head surgery, and orthopaedic cases. A great leap forward was the introduction of inhalation anaesthesia (Numans and Lagerweij 1963, Offringa 1981). The increased interest in equine medicine and surgery also boosted horse-related research. Research topics included gait analysis, biomechanics and osteoarthritis. There was international recognition for these clinical, educational and scientific achievements of the Veterinary Faculty. In 1973, a combined team of the Council on Education of the American Veterinary Medical Association (AVMA) and the National Examining Board of the Canadian Veterinary Medical Association (CVMA) paid an accreditation visit to Utrecht University. As a result the Veterinary Faculty of Utrecht University became the first faculty outside North America to obtain full accreditation. Since then visits have been made in 1978, 1985, 1992, 2000 and 2007 and the accreditation has been maintained after every visit (van Beukelen 2007).

Revival of equine veterinary care

Veterinary attention dedicated to horses in the second part of the twentieth century was not associated with the military anymore, but with the breeding, examining, training and treatment of sport and leisure horses. This new position of the horse, leading (again) to an increasing economic importance of the equine sector, was acknowledged by the government and breeding organizations. At that time the craftsmanship of the Dutch farmers in breeding cattle, poultry and pigs resulted in a flourishing agro-industrial complex, facilitated by regulations and subsidies of the European Union. The existing knowledge and institutions were slowly but surely also made available for the equine species and funds were dedicated to do research at government owned equine field stations in collaboration with the Veterinary Faculty and Wageningen Agricultural University. This resulted in popular and scientific publications on equine housing, feeding, exercise and training, fertility, osteochondrosis, pre-purchase examinations and the clinical significance of

radiographic findings, the latter being of great help for the Dutch equine studbooks with their selection of sires and dams.

These developments did however not change the veterinary curriculum at the time. This remained a single track curriculum aiming at the formation of the classic "omnipotent" vet. Meanwhile, out in practice there was a growing demand from horse owners, cattle breeders, pig farmers, companion animal owners etc. for veterinarians with more specific knowledge on the species they were interested in, and self-educated and unofficially specialised equine vets started to be recognised. Only a few veterinarians responded to this new market demand and they were the equine veterinary pioneers from the postwar period, ahead of their time. It took a long time before the Royal Veterinary Association of the Netherlands and the Veterinary Faculty responded to these *de facto* changes (Offringa 1981). This had more to do with clinging to old-fashioned concepts by the Association than with a lack of knowledge on the equine species at the Faculty where equine research started to boom in the late 1970s and early 1980s. Much research was done on the growing equine patient populations of the clinical departments (Kalsbeek 1970, Dik et al 1978, Barneveld 1981, Wagenaar 1983, Kersjes 1983ab, Merkens and Rutgers 1983, Wagenaar and Kroneman 1986, Bos et al. 1986), but especially in those days students were kept at a safe distance and not often allowed to give an intravenous injection, castrate a horse, apply local anaesthesia or inject a joint (Offereins 2000, H. Offereins and P. den Hartog personal communications 2008). Therefore, after obtaining the general qualification to practice veterinary medicine, the practitioners who wanted to specialise in equine medicine had to educate themselves further in practice by reading (foreign) equine veterinary journals, visit (foreign) equine practitioners and share experiences, extrapolate knowledge from other species and of course by trial and error. Specific equine therapeutics were scarce and colic surgery was initially only performed at the university clinic, with often disappointing results. This was at least partially due to the fact that horses used to be referred at a very late stage, often even moribund. On the other hand practitioners and owners were discouraged by the results of colic surgery and tried to avoid or postpone surgery as much as possible, leading to a vicious circle that was hard to break. When finally the horses were sent in at an earlier stage, the outcome of (surgical) intervention improved dramatically, which enhanced the mutual understanding between the referring equine practitioner and the Faculty. In the 1980s and 1990s colic surgery started to be provided as a service in some practices in the Netherlands and across the border in Germany, where the equine veterinary pioneers of that period faced this challenge because of personal interest or forced by their geographic position that precluded timely referral. Slowly but surely these self-made equine practitioners established well known equine practices throughout the country, gaining expertise from their increasing caseload and driven by their enthusiasm, eagerness to learn, will to travel, and dedication to the equine species. Sophisticated facilities with respect to diagnostic imaging, inhalation anaesthesia, operating theatres, mobile and adjustable

operating mattresses, osteosynthesis, arthroscopy, endoscopy, artificial insemination, ultrasonography and embryo transplantation became gradually available at these practices (Loomans *et al.* 2007).

Organising equine veterinary care in the twentieth century

The changing position of the horse in Dutch society was recognised in the early seventies by some equine specialists among the staff members of the Veterinary Faculty. Professor G. Wagenaar from the department of Large Animal Medicine, together with Dr. F. Németh from Large Animal Surgery and two practitioners, F. v.d. Veen DVM and P. den Hartog DVM, established the "Nederlandse Vereniging voor Paardenpractici" [Dutch Association of Equine Practitioners] in 1971, which society still exists to date as "Groep Geneeskunde van het Paard" [Society for Equine Veterinary Medicine]. From the start, this association has always included both practitioners and staff members of the Veterinary Faculty. This group of equine veterinarians provides an identity to those involved in the treatment of horses and acts as a platform and network for equine veterinary healthcare.

Already in 1966 a discussion started between the veterinary faculty and the Royal Veterinary Association of the Netherlands about differentiation (tracking) within the curriculum, but these talks remained without results (Offringa 1981). In Europe there was agreement that the single diploma and general competence of the veterinarian had to be maintained. However, specialisation after graduation was generally accepted and acknowledged by the European Union in Wiesbaden in 1972 (Offringa 1981). In the Netherlands, the specialisation was organised by the Royal Veterinary Association of the Netherlands. Regulations for the acknowledgement and registration of veterinary specialists were written and an official registration committee was installed (Anon 2008). Fields for equine specialisation were internal medicine, reproduction and surgery. Diagnostic imaging became a cross-species specialisation. Beginning in the 1990s, equine practitioners who had ample expertise and a proven track record in one of these disciplines were encouraged to apply for a "*de facto*" recognition; they would form the founding fathers of the new specialisations. Specialists were supposed to spend at least 50% of their time working in the field of their specialty and had to prove this by maintaining a case log. Further, they had to apply for reaccreditation every five years. Training as an equine specialist was only possible while working at a clinic with more specialists and a caseload that was big enough. As a consequence, nearly all new specialists were educated at the Veterinary Faculty, introducing the, until then unknown, phenomena of equine internships and residencies, and increasing the need for cases. Eventually, the entire structure of the large animal clinical departments was changed, not only because of the demand for species-oriented specialisation, but also because both the veterinary profession and the Veterinary Faculty sensed a changing demand from their stakeholders. In 1992 the Dean of the Veterinary Faculty appointed a committee to write a strategy report

for the Veterinary Faculty for the foreseeable future, thereby taking into account the changes in the profession. The committee believed that the time was now ripe to introduce a species-related tracking system in the veterinary curriculum that would provide the students with a better starting competence for one or more specific species (companion animals, farm animals, horses), while maintaining the general qualification (Anon 1994). In fact, it was a kind of comeback of the "equine veterinary officer first class", this time not requested by the Ministry of War (that in the meantime had been renamed as Ministry of Defence), but by the present-day stakeholders in the equine industry: owners, breeders, insurance companies, etc. The new curriculum started in 1995 with so-called mono tracks dedicated to a single species, but still contained combined tracks such as companion animals and equine, or bovine, porcine and equine. In 1999 the Veterinary Faculty moved from a discipline-oriented organisation to a species-oriented organisation and the Department of Equine Sciences was created, including all equine activities from the old surgery, medicine, reproduction and ambulatory clinics. Some years later funds were made available to rebuild and extend the old surgical clinic in order to create an equine hospital for all disciplines, which was officially opened in November 2007 by the Minister of Agriculture.

Contemporary equine veterinary care

When Europe followed the US in establishing colleges for equine veterinary specialists, it was decided that from 2003 onwards registration as a specialist in the Netherlands should imply a European diploma for those specialisations that were covered by European colleges (Lumeij and Heritage 2006).

Table 1.

Working environment of equine specialists registered in the Netherlands (Anonymous 2003).

	Practice	Faculty	Not practicing	Job abroad	Total
Diagnostic imaging	2	2	0	1	5
Equine reproduction	9	1	1	2	13
Equine internal medicine	3	6	6	2	17
Equine surgery	7	11	9	1	28
	21	20	16	6	63

Some Dutch specialists made the effort to become a European diplomate, but most specialists, especially those who worked outside the Veterinary Faculty in private

practices, decided to stick to the Dutch title, which was very well accepted by horse owners, insurance companies and equine veterinarians.

At that time the private equine practices in the Netherlands were not yet ready for the specialists and only one third was employed in practice (Table 1.). In this period much of the work we nowadays would call specialist work was done by self-educated equine practitioners from the first hour. They had "conquered" this position through a continuous investment in self-development that brought no title, but yielded knowledge and skills that were widely recognised and respected (Loomans et al 2007). Already in 1988 the Veterinary Faculty did marketing research on the employment of veterinarians (van Dijk and de Vries 1988). Recommendations concerning the curriculum were the introduction of more diversity in the education, which included species-oriented tracks. Further, for practice, the development of larger multi-vet practices with species-dependent sections was recommended. The veterinary profession received the advice to implement quality systems for practices and also for (species-specific) veterinarians, in order to make quality of care recognisable. As said earlier, tracking in the veterinary curriculum started in 1995 and the Royal Veterinary Association of the Netherlands started to work seriously on a quality system for veterinary practices embedded in a standardised ISO system and a species-specific system of acknowledged veterinarians. The agro-industrial complexes in the farm animal sector requested these acknowledgements for their quality systems in the food chain. Equine veterinarians, studbooks and equine insurance companies believed it to be a good and transparent quality system for equine practice too and added a quality system for pre-purchase examinations and examinations for selection of breeding stock (VKO 2002, 2003, de Groot and de Ruiter 2004). In neighbouring European countries similar systems for acknowledged equine veterinarians (separate from European specialists) were introduced such as the "Vakdierenarts Paard" in Belgium, "Fachtierarzt für Pferde" in Germany, "Spezialtierarzt FVH für Pferde" in Switzerland, and "Equine Board Certificates" in Great Britain. The response to the introduction of what was to be called the Acknowledged Equine Veterinarian in 2001 in the Netherlands was beyond expectations. For this certificate, equine practitioners needed to have at least two years of experience in equine practice, work at least 30 hours per week hands on with horses, and attend continuing education (CE) for at least 40 hours per year. Further, a basis course of three days had to be attended. There was a reassessment every two years. At the end of 2004, not less than 428 acknowledged equine veterinarians had been registered. Audits revealed that 23% of these had problems with the number of the hours hands-on and 17% failed with respect to the CE credits (Loomans 2004). An additional qualification was that of official pre-purchase examination vet, who was allowed to perform pre-purchase examinations for specific insurance companies and studbooks. Additional requirements for these vets included proof of adhering to an official protocol for the examination of horses for two years or more, adequate hardware and facilities and the protocols, including radiographs, of at

least twenty examinations had to be available for reassessment by an official committee. At the end of 2004, 19 official pre-purchase examination vets had been registered. Practice certification according to an ISO protocol, was introduced step by step in this accreditation system. For the equine practitioners this was voluntary, but for farm animal species it was obligatory. This caused much upheaval in the normally relatively quiet and loyal veterinary profession and almost led to the dissociation of the Royal Veterinary Association of the Netherlands. The Association then sent all veterinarians a questionnaire on the subject (Voorsluis 2005). Based on the outcome, it was decided to dismantle the quality system. The obligation imposed by the Association changed into an appeal on the moral standards of the vets. The tragic end of the quality system was not welcomed by some stakeholders, in particular the insurance companies and the studbooks, which were happy with their qualified pre-purchase vets. They insisted on the reintroduction of this part of the system, which indeed has been effectuated at the end of 2007.

The introduction of the acknowledged equine vets originated a very positive momentum for the development of the equine veterinary profession. The basic courses were fully booked. In these, many subjects that were relevant for practice were discussed in-depth, indirectly creating consensus on the best approaches. The outcome of these discussions served as a basis for the establishment of professional guidelines that, once agreed upon, were published in the "Tijdschrift voor Diergeneeskunde" (Dutch Veterinary Journal). Guidelines were made on acute lameness, fertility, infectious diseases, colic, semen handling, rectal tears, foal diseases etc, which were also used in court cases (Sloet van Oldruitenborgh-Oosterbaan et al 2003, Seuren-Coppens et al 2003, van Schie and Barneveld 2003). The introduction of the "Acknowledged Equine Veterinarian" was in line with the curricular development at the Veterinary Faculty. In 2001 the curriculum was renewed again. The tracking system was extended to the first four pre-clinical years, which consisted of a common core track for all students and a species-related part that started already in the first year. Further, there was more emphasis on the development of academic skills and on development of a professional attitude. The clinical education consisted of one general year for all students in which they rotated over all clinical departments and a final clinical year that was completely dedicated to one species or group of species, being farm animals, companion animals or horses. This curriculum aimed at more in-depth knowledge and skills in the direction of choice than a mere starting competence. Outcome criteria for the veterinary curriculum were defined in collaboration with the veterinary profession in the field and used as a yardstick for the quality of the curriculum (van Beukelen and van der Maazen 2006).

The importance of the equine species is clearly visible in the Dutch landscape where horses are outnumbering cattle in some places. Agriculture has intensified enormously over the past decades and has increased in scale thanks to technical developments and forced by worldwide competition. The small farms that were

responsible for the initial growth of the agro-industrial complex are being abandoned by the older farmers, who are replaced by hobby farmers keeping horses, sheep and cattle for fun, recreation and competition, but not for earning a living. These horses however have to be bred, born, educated and taken care of, thus offering employment for a growing equine sector that has even outgrown Holland's famous flower bulb industry in economic importance. With an annual turnover of over two billion Euros the equine sector has become an industry in its own right and is attracting the attention of the government and investors (PVE 2008). On a population of sixteen million people, 456,000 persons (older than 8 years of age) have been riding a horse at least once a week for 5 years and 81,000 of them participate in equine competitions and events (Anon 2006). The Royal Netherlands Equestrian Federation has become the fifth sports federation of the country with 195,526 members in 2007 (KNHS 2008). The estimated number of horses in the Netherlands is 440,000 which are for almost 100% sport and leisure horses (PVE 2008). Compared to the 364,000 horses in 1921, when horses were still almost exclusively used for transport, agriculture and the military and hardly for sport and leisure, this number is impressive. Of course these developments have consequences for equine veterinary healthcare. Compared to 87 equine veterinarians for 326,000 horses in 1940 (3,747 horses/vet), there are now 415 Acknowledged Equine Veterinarians (1,070 horses/vet). Despite the fact that the underlying care quality system has ceased to exist, the title of Acknowledged Equine Veterinarian is still widely used and people tend to maintain their registration by paying an annual registration fee. Certified equine pre-purchase examination veterinarians increased in number from 19 in 2004 to 45 in 2008. The maintenance of this title requires a minimum number of cases per year (Stichting paard 2008). The number of registered equine specialists in the Netherlands at the end of 2007 with a Dutch or international diploma was 88: internal medicine 25, surgery 35, reproduction 15 and diagnostic imaging 13. At the moment there are 1324 veterinary practices in The Netherlands, of which 252 employ Acknowledged Equine Veterinarians and/or Equine Pre-purchase veterinarians and/or a registered Equine Specialists (Anon 2008).

Conclusions

This study has tried to picture the role of the providers of equine healthcare against the background of the developing veterinary profession from the cradle, when equine healthcare was an important strategic military item and instrumental in the establishment of veterinary schools throughout Europe, to the present situation where specific equine veterinary medicine is back on stage and is again seen as an important part of the veterinary profession.

There is a strong demand from the clients for specific equine healthcare and some vets have strong personal interests in the sector. This ongoing differentiation is

formalised and facilitated by the veterinary profession through the introduction of acknowledged equine veterinarians, equine pre-purchase examination veterinarians and board certified equine specialists. Also, the introduction of the equine track in the veterinary curriculum and equine residencies and internships provide veterinarians with an equine profile. This is not an exclusive Dutch development. There is worldwide increasing interest in horses and equine medicine, as can be witnessed by many international journals on equine veterinary practice, a large offer in international continuing education on equine healthcare and the existence of many national and international equine veterinary organizations.

Speaking strictly legally the equine vet does not exist as a separate profession, because there is only a single and general diploma. Indeed, some professionals practicing equine veterinary medicine still treat other species as well (Loomans et al 2007) and vice versa since they are allowed to do so by law. However, societal changes and client demand have created a "de facto" equine vet and make the number of practices and practitioners working solely with horses still grow. It can be said, therefore, that the equine vet is back on the veterinary stage after a period of absence, in a position that is recognised and appreciated by the stakeholders and the veterinary profession itself.

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Chapter 3

A survey of the workload and clinical skills in current equine practices in the Netherlands

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Introduction

There is hardly any domesticated species other than the horse that has seen its role in human society change so dramatically in the past few decades. Losing the traditional positions it held in warfare, transport and agriculture for several millennia within only a couple of decades, the horse had a glorious comeback as a leisure and sports animal. In line with these developments, the equine industry changed profoundly. Once the equine industry was a professional but low input business with its roots in the countryside and incidental contributions from highly specialised professionals such as the military. It has turned into an economically important activity involving a limited number of professional horse keepers and horse breeders and an ever increasing number of enthusiastic but relatively unskilled lay people. These changes in the social position of the horse have resulted in profound changes of the equine veterinary profession too. Demand for equine health care has increased vastly and includes primary health care as well as the diagnosis and treatment of performance limiting factors. Furthermore, the changing attitude towards the role of animals in society has brought more attention for welfare issues as well.

Basically the veterinary profession is market-driven and has made several attempts to comply with the changing demand. Veterinarians have specialised in equine medicine and surgery and even in distinct sub-disciplines of equine health care. They have, in various countries, established specialist degrees and certifications that testify special knowledge and skills and should guide the client in his or her choice, which vet to consult. Obligatory continuous education systems have been introduced which aim at guaranteeing that, once a certain degree has been obtained, the required knowledge and skills are maintained and kept up-to-date. Furthermore, many techniques that originally were developed for human medicine have been adapted for use in the horse. This introduction of high-tech approaches in the equine practice has greatly enhanced diagnostic and therapeutic possibilities, but it often required huge investments in terms of time and capital. Also, many veterinary institutions have made attempts to modernise their courses in order to comply with changing demand in the field. In the new 2001 curriculum of Utrecht University in the Netherlands, the general competence remains, but species differentiation is obligatory and provides additional knowledge and skills concerning the species chosen.

All these developments and anticipating actions have been based on expectations and gut feeling rather than on well-documented studies. Minimum numbers of "hands on" contact hours with the horse have been prescribed for vets who, once registered as acknowledged equine veterinarians, want to keep their registration. However, very little is known about the real average number of hours the equine practitioner is actually spending hands on. Important personal and financial sacrifices are made by individual veterinarians to obtain a title of internationally acknowledged diplomate, but very little is known about the return on investment and the possibilities to

maintain this title in practice. Is there enough quality demanding work for these specialists or are they doomed to a role in equine practice that is not essentially different from those of their colleagues who did not make the extra effort? Such questions cannot be answered until more is known about the actual workload in equine veterinary practice and about the diversity and relative importance of the tasks that are performed, and thus of the skills that are required. Accurate and up-to-date information about these items is badly needed if the rapid changes in the veterinary profession are to be given some rational basis. The need for such information is more pressing, as there are indications that increasing rates in occupational disability might be linked to the rapidly changing environment of the (equine) veterinary practitioner and their inability to cope adequately with these changes.

Detailed information on this topic is, to the authors' knowledge, not available from any place or country in the world where modern equine veterinary medicine is practised. It was the aim of this study to perform a survey focusing on the actual activities of the equine practitioner in terms of total workload, hours spent "hands on", relative importance of the various organ systems and disciplines and within these of the specific interventions, *i.e.* of the relative importance of the various skills that are required. Special attention is given to the role and specific activities of the registered equine veterinary specialist.

The study has been performed in the Netherlands. It is acknowledged that each country or place has its own peculiarities, but it was nevertheless deemed that the situation in the Netherlands could be considered a relatively good representation with respect to the developments in horse husbandry alluded to earlier. For ease of comparison the first paragraph of the materials and methods section contains some numerical data about horse keeping and about the veterinary profession in the Netherlands.

Material and methods

The Dutch equine sector

The total horse population in the Netherlands has been estimated at 400,000 with a 4% annual increase. The latest available data show that 400,000 people older than 8 years are riding a horse at least four times a year (2.5 % of the entire population). Within this group 340,000 are recreational riders and 60,000 compete in equestrian events on a regular basis. Dressage is most popular (91%), followed by show jumping (39%), driving, endurance, and Western riding (12%), vaulting (11%) and three-day-eventing (6%). Standardbred and Thoroughbred racing were not included in that study. Total annual turnover of the equine industry in the Netherlands is an estimated two billion euro.

Internationally the Dutch (and their horses) compete at the highest level in the dressage, show jumping and driving disciplines. The very good results at the Olympics of Barcelona, Atlanta, Sydney and Athens have had an enormous impact on the Dutch equine industry with respect to export of Dutch Warmblood horses, professional development of the riders, equestrian organisations and equine education at various levels.

The (equine) veterinary profession in the Netherlands

In the Netherlands 1017 veterinary practices provide veterinary healthcare for all animal species. Although there are still many general practitioners, there is a strong tendency towards differentiation to treat one or two species. The Royal Netherlands Veterinary Association in 2001 introduced titles of "acknowledged" equine, bovine, porcine, and poultry veterinarians that could be obtained after following a postgraduate course and maintained by continuing education and sufficient hours "hands on" for the species chosen. The certificate of "acknowledged veterinarian" should guarantee a sufficient level of knowledge and skills with respect to a certain species that good veterinary care can be given. It is, however, not equivalent to a specialist title, that can be obtained also, but will require a 4-year full time course and 4 publications. The title of "acknowledged veterinarian" was introduced to increase quality and decrease differences in quality of veterinary work partly because of customers demand, partly as a marketing tool. At this moment (2003) 415 acknowledged equine veterinarians (AEV's) are registered, who work in 219 different veterinary practices throughout the country. There are 63 nationally and/or internationally registered equine specialists in the Netherlands (28 equine surgery, 17 equine internal medicine, 13 equine reproduction, 5 radiology), of whom 21 work in 16 different private veterinary practices, 20 at the Equine Department of Utrecht University, 5 abroad and 17 are not practising.

Experimental set-up

The population of the study consisted of private veterinary practices where, in January 2003, acknowledged equine veterinarians were at work. From this population a total of 24 (16%) of the practices were randomly selected, after blocking for region, single vet or multi vet practice, equine or mixed practice, and registered equine specialist available or not available. The 34 practices employed 74 (22 %) of the total number of acknowledged equine veterinarians.

The practices were approached by telephone, sent a questionnaire and afterwards visited for a personal interview of the AEV's and registered equine specialists by the first author (JBAL).

The questionnaire consisted of three parts; one concerning the practice situation, one with detailed questions on the specific veterinary skills practised, and one with personal questions to be filled in by each individual equine veterinarian.

Equine veterinary skills

For the inventory on equine veterinary skills a comprehensive list of 168 skills was developed and for each of these skills the following questions were asked:

1. How often were these skills applied in your practice in 2002 (in numbers)?
2. Did, in your perception, this number change during the last five years? (five point Likert scale from 1 very much decreasing, 3 level, to 5 very much increasing)
3. How much time on average (in minutes), is involved in performing a skill?

The total time involved per practice was calculated by multiplying the number of times a skill was applied (1) with the time involved (3). Practitioners were also asked whether they felt that they had missed specific skills and/or training they should have been taught in college.

The various skills were listed in different categories, mainly according to organ systems. For each category the percentage of time accounted for is given as a percentage of the total time. The data were processed in Excel® (Microsoft Corp.) and the results of the individual questionnaires were linked to those of the practices the practitioners work in.

Time "hands on"

At practice level time accounted for applying veterinary skills, excluding travelling time, could be calculated by multiplying the number of times a skill was applied (1) and the average time involved (3). The sum of these multiplications result in the total time "hands on" in this practice and divided by the number of equine veterinarians in this practice results in the average time "hands on" per equine veterinarian in this practice.

Time available for equine work

In order to be able to compare the equine work of the different equine veterinarians the variable "time actually available for equine work" (TAEW) was introduced:

TAEW	=	HEW (52 - HW - CPD - I)
HEW	=	Hours equine contact / week (estimated by the equine practitioner, not the time actually accounted for by applying skills or travelling)
HW	=	Holiday in weeks / year
CPD	=	Continuing Personal Development in weeks / year
I	=	Illness in weeks / year

This is the time actually available for an equine practitioner to do "horse work", independent of time spent on other species or other veterinary practice activities in a year. TAEW of a practice is calculated by the sum of the TAEW of the individual equine veterinarians. Average TAEW per equine practitioner in a given practice is the sum of TAEW in the practice divided by the number of equine practitioners employed.

Travelling time

For every practice the number of visits to equine patients was recorded, and the average travelling time involved. Thus, average travelling time per equine practitioner could be calculated at practice level.

Specialists

Practices were divided into practices with and practices without registered (national or international) equine specialists. Average time spent on the different skills was calculated for the two groups of practices.

Data analysis

Averages could not always be calculated over the total number of practices or practitioners involved. If a 0 was given as an answer, indicating for instance a certain skill was not applied in this practice at all, this figure was included in the calculation of the average and the standard deviation. If no figure was given because the question could not be answered with the information available this practice was excluded from the calculation of the average and standard deviation of this particular question.

For differences in workload between practices employing specialists and practices without specialists, significance of the differences between averages was assessed using 95 % confidence intervals that take into account the standard deviation and the small number of practices with specialists involved.

Results

Working hours

The average working week of the equine veterinarian in this study is 53.5 (± 13.5) hours. This average includes 16.2 % part time working equine veterinarians. Of the part time working veterinarians 92 % are female (20 % of the equine practitioners in this study are female). Veterinarians were on duty 7 evenings and nights during working days and 1.4 complete weekends a month.

Equine veterinarians in this study estimated they spend 61 % of their working hours treating horses. The other 39 % involved attending other species, practice management, continuing professional development etc. (figure 1). Of this time available for equine work only 70 % could indeed be accounted for based on the activities that were registered in the practice (50 % applying skills and 20 % travelling). There were marked differences between individuals and practices in the variables concerning working hours, as exemplified by the large range (table 1).

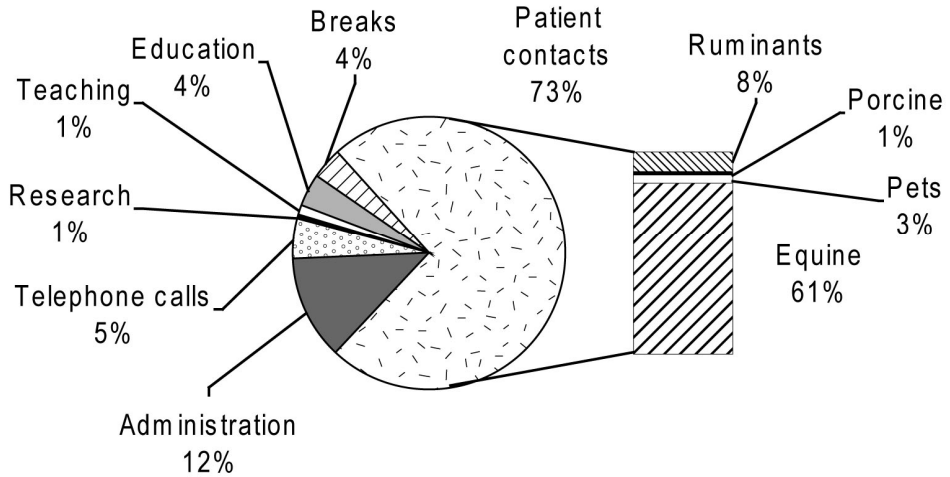


Figure 1. Average time spending estimated by the equine practitioners in this study in % of the working week.

Table 1. Weekly hours time spending of equine veterinarians.

	Mean	STDEV	Range	
Working hours*	53,5	13,5	15,0	80,0
TAEW*	29,2	14,9	2,0	54,0
Time "hands on" #	14,7	8,8	1,5	42,0
Travelling time #	5,7	6,5	0,0	26,0

* hours based on individual **estimations** by the equine veterinarian

TAEW = HEW (52 - HW - CPD - I)

HEW = Hours equine contact / week

HW = Holliday in weeks / year

CPD = Continuing Personal Development in weeks / year

I = Illness in weeks / year

hours **accounted for** by practice administration

Table 2.

Time for applying specific veterinary skills in % of total time "hands on" of the 34 practices involved.

Veterinary skills:	%
Lameness consultation	11
Follicle check	11
Vaccination	6
Pre-purchase examination (clinical and radiological)	6
Pregnancy diagnosis	5
Radiology locomotor system	5
Routine dental check-ups	3
Consultation colic	3
Pre-purchase examination (clinical only)	3
General anaesthesia (inhalation)	2
Arthrocentesis	2
Ultrasonography locomotor system	2
Regional nerve block	2
Castration	2
Intra-uterine treatment	2
Pre-purchase examination (radiology) only	2
Surgical wound treatment	2
Endoscopy respiratory system	1
Arthroscopy	1
Consultation respiratory system	1
Consultation internal medicine	1
Rectal examination (non gynaecological)	1
Blood sampling	1
Applying transponder	1
Colic surgery	1
Application of nasogastric tube	1
Manual removal of placenta	1
General anaesthesia (intravenous)	1
General consultation	1
Caslick operation	1
Clinical chemical blood screening	1
Premedication/Sedation	1
Euthanasia	1
Application of bandages	1
Total fertility "package deal"	1
Consultation dermatology	1
Intra-articular anaesthesia	1

Shows 37 out of the 168 skills that account for 1 % or more of total time "hands on".

Specific skills

The relative importance of specific veterinary skills varies widely. Relative amount of time spent per single item varied from 11% of total time (for lameness consultations and follicle checks) to 0.001% (for aspiration biopsies of bone marrow). Table 2 gives the 37 skills that account for 1 % or more of total time hands on.

In table 3 time spent is categorised according to organ system involved and to a number of not organ-related activities. It shows that the locomotor system and the female genital system take more than half of total available time. The digestive system and the first not organ-related activity (pre-purchase examination) make up for another 20%. Together, the four items constitute approximately two thirds of the workload of the equine practitioner.

Table 3.

Time spent categorised according to organ system involved and to a number of not organ-related activities in % of the total time "hands on" of the 34 practices involved.

<u>Organ system involved, or not organ-related activities:</u>	<u>%</u>
Locomotor system	27.7
Female genital system	23.9
Digestive system and metabolic disorder	11.5
Pre-purchase examination	10.6
Vaccination	5.7
Anaesthesiology	4.6
Respiratory system	2.9
Male genital system	2.7
Injuries and trauma	2.2
Identification, Registration, (Insurance) Certificate	1.8
Skin	1.0
Euthanasia	0.8
Nervous system and sensory system	0.3
Circulation, blood and hematopoietic tissues	0.2
Urinary system	0.1
Other	4.0

Developments in the application of specific skills

There is an increase in the use of various diagnostic techniques skills in different organ systems over the last 5 years (table 4). These include broncho-alveolar lavage (BAL), radiography of the locomotor system, ultrasonographic examination of the respiratory system, abdomen and parts of the locomotor system, endoscopy of the respiratory system, gastroscopy, and the application of regional and intra-articular

anaesthetic blocks. There also is an increase in animals subjected to general (inhalation and intravenous) anaesthesia and colic surgery. Further, the amount of preventive and curative dental work done by equine practitioners increased.

Table 4.

Top 25 of skills / techniques reported to have increased over the last 5 years. Average of practices involved on a Likert scale from 1 very much decreased, 3 level, 5 very much increased.

Skills / techniques:	Score
Broncho-alveolair lavage	4.2
General anaesthesia (inhalation)	4.1
Lameness consultation	4.0
Ultrasonographic examination respiratory system	4.0
Shockwave therapy	4.0
Gasteroscopy	4.0
Ultrasonographic examination locomotor system	4.0
Intra-articular anaesthesia	4.0
Applying transponder	3.9
Routine dental check ups without sedation	3.9
Arthrocentesis	3.9
Visits	3.8
Colic surgery	3.8
Ultrasonographic examination abdomen	3.8
Regional nerve block	3.8
Castration (inguinal approach)	3.8
Vaccination EHV	3.8
Arthroscopy	3.7
Joint lavage	3.7
Routine dental check ups with sedation	3.7
Pre-purchase examination (clinical and radiography)	3.6
General anaesthesia (intravenous)	3.6
Removal of molar teeth	3.6
Euthanasia	3.6
Endoscopy respiratory system	3.6

Note: skills / techniques are not applied in all practices, hence n varies.

Missing skills

The skills missed most were management skills 44% (practice management, economics, and entrepreneurship), specific veterinary technical skills 34% (dental skills, pre-purchase examination), social skills 21% (communication, teamwork) and scientific skills (1 %).

Specialists

Although the group of practices where an equine specialist is employed is small, significant differences could be revealed for certain skills (table 5).

Table 5.

Average time spending in minutes on specific skills in practices with registered equine specialists (n=6) and practices without registered equine specialists (n=28).

Registered equine specialist	Yes Minutes	No Minutes
General anaesthesia (inhalation)	16,525	695
Pre-purchase examination (radiography only)	9,140	748
Consultation dermatology	7,595	610
Colic surgery	6,268	170
Ultrasonographic examination locomotor system	5,758	1,514
Upper airway endoscopy	4,808	757
Intra-articular anaesthesia	2,267	638
Radiological examination KWPN mares	1,729	453
Introduction of dauercatheter	617	24
Ultrasonographic examination abdomen	608	92
Skin biopsy	553	45
Gasteroscopy	375	4
Removal of molar teeth	368	61
Ovariectomy	362	27
Longfunction examination, pleural pressure measurements	200	3
Uteroscopy	188	10
Guttural pouch endoscopy	161	41
Surgical treatment of uterine torsion by laparotomy	108	19
Enucleatio bulbi	86	17
Tracheotomy	46	8
Liver biopsy	30	0

Skills given are those with significant differences using a 95% confidence interval.

There are 21 skills on which significantly more time is spent in practices with equine specialists. Those are mainly diagnostic skills, but they include also more complicated surgical procedures performed under general inhalation anaesthesia. However, there are only a few skills that are not performed at all in practices without equine specialist. These are taking of liver biopsies, embryo transplantation, laparoscopy, guttural pouch surgery and surgical treatment of rectal tears.

Discussion

The equine veterinary practitioner has the aura of a hard-working professional, covering many miles as he or she is driving from one client to the next one (Blach 2004). It is an often hectic way of life, dominated by the next call and its degree of urgency that leaves little time for reflection or for the detailed registration of activities. This situation has hindered research in and on veterinary practices for a long time. Attention always focused on actual and imminent problems, and attempts to assess the status and setting of the practice as a whole were considered a waste of time. However, the tide is turning and there is an increasing interest in benchmarking, and in the development of parameters that permit the comparison of practice results, the setting up and comprehensive analysis of practice trials for evidence based veterinary medicine, etc. To allow the development of these parameters and to trace the most important items that might make pro-active interventions necessary, basic information is needed about both the actual situation in the equine private practice and about the perception of the equine practitioners themselves and the public of this situation. This study is a first attempt to provide such data.

The present study, as almost any other study relying on questionnaires and interviews, has certain limitations. Objective, quantitative data were not always available. In a way this was sometimes an advantage rather than a disadvantage as it provided information about the discrepancy between the conception by the equine practitioner of his or her work and reality. Questions on working hours and hours of equine contact could for instance only be answered with a best possible estimation. Time associated with applying specific skills could be measured much more accurately as the specific interventions are often repeated and the time necessary for performing the action is used to establish practice fees.

The information on numbers of applied skills in this study has been derived from various kinds of practice management systems and often related to invoices. Hence there was a lot of variation in definitions of skills. Some practices used to combine various interventions in a single consultation fee (like introduction of a nasogastric tube and rectal examination as standard parts of a consultation for colic), and others had a detailed description of all specific interventions performed on a certain patient.

As a result the list contains skills like general consultation, respiratory system consultation etc. In those cases a more specific differentiation could not be made. However, even in these cases it is possible to assess the relative importance of the various organ systems.

There were huge differences with respect to the weekly working hours. The average of 53.5 hours is substantially more than the classical working week, but extreme figures up to 80 hours were encountered. Extremely long working weeks that also include night and weekend duties can cause work stress and occupational disability (Stembert 2003), and are not as easily accepted anymore by veterinary graduates as they once used to be (Heath 2002). Such a perspective, especially in combination with a salary based on a working week of 40 hours, may well prevent young graduates from entering this specific field of veterinary medicine, notwithstanding the attractiveness of the species and the work itself. The other development that became visible, the increase in part time workers, can cause problems in the organisation of the 24 hours a day covering of veterinary services and hinders the development of sufficient experience for certain skills.

The actual time spent "hands on" is not more than 50% of the total time available for equine work. This may be considered as disappointing and is clearly not recognised by the average equine practitioner, as there is a large discrepancy between his or her estimate and reality. Part of the reason may be the relatively large amount of time spent in the car going from one client to another, but then still 30% of time is missing that is apparently spent on administration, communication, and management affairs. This outcome is important for the discussion about the minimum number of hours an equine practitioner should spend "hands on" to maintain a certain certified status. The actual minimum requirement for an Acknowledged Equine Veterinarian in the Netherlands is 30 hours per month. This seems a very minimal number of hours, given the average number of working hours of 180 per month, but still 17% of the equine practitioners in this study did not comply with this norm.

The bulk of equine work "hands on" consists of lameness consultations, follicle checks and pregnancy diagnoses, vaccinations, pre-purchase exams, radiology of the locomotor system, dental check-ups and colic consults. These activities account for over 50 % of the time spent "hands on" of the average equine practitioner. Of these activities, over the past five years, lameness consultations, dental work, vaccinations and pre-purchase examinations have increased significantly. This information is important for institutions of veterinary education. Many equine practitioners indicated that they have missed adequate education in the treatment of dental problems and in performing pre-purchase examinations. The older practitioners indicate the same items as insufficient in the education of the recently graduated colleagues. There are other skills, that are not as frequently practised as the ones mentioned above, that can be considered of paramount importance for the equine veterinarian, and hence

also of fundamental interest to teaching, because they are required in emergency situations when the public expects immediate and adequate action. These include the thorough and complete examination of various organ systems; wound management, applying local anaesthesia, nasogastric intubation, sedation, obstetric help and euthanasia. These skills form, even more than the ones practised most, the cornerstone of equine healthcare and welfare. Overall, it can be said that the backbone of most equine practices is formed by a relative small amount of activities for which a limited number of skills is necessary.

The equine veterinary specialist has followed an in-depth training in his or her speciality. Although there is no doubt that there is a certain demand for specialist skills and even super specialist skills, it can be questioned to what extent these specialist skills are needed in the average equine practice. In this study only a small amount of relatively insignificant skills was performed exclusively in practices with equine specialists, and a somewhat larger number was performed significantly more often in those practices. Apparently, there are hardly any skills one could indicate as the prerogative for the specialist. In this context it should be noted that the present study only gives information about the number of interventions that were carried out and about the time spent doing so, but not about the quality of the work. Nevertheless, the figures provided by this study, together with the fact that only 33% of the available registered equine specialists in the Netherlands work in veterinary practices, suggest that a critical evaluation of the position of the equine specialists in relation to the non-specialised equine practitioner might be useful. There are various considerations to be taken into account in such an evaluation. From the present survey it emerges that most of the specialist work is not only done by graduated specialists, but also by practitioners who have educated themselves in practice and through CPD courses and in-practice facilities at home or abroad. They are known to their clients and do not need a title as their reputation alone is sufficient. Most of them graduated before the introduction of specialist titles and their busy practices and financial constraints prevent them from following a four-year institutional course. However, the market becomes more and more demanding. This is exemplified by the recent introduction in the Netherlands of strict requirements with respect to skills, experience and facilities, for performing entry examinations for insurance companies. These requirements were a joint action of the insurance companies and the Society for Equine Veterinary Medicine. It is to be expected that such developments will continue and are going to include equine practitioners performing therapeutic and surgical interventions on insured horses.

One of the main conclusions from this study is that there are huge differences between the daily activities of those people who all call themselves "equine practitioner". There are two principal reasons for this. One is the big difference in time spent "hands on". The other one is the big variety of the veterinary skills that are used. Although this study did not address the quality of the work, as stated

above, these huge differences raise various questions as to the level of the services that are offered. It can be very tempting from a competitive viewpoint to try to do everything and use every possible technique in order to be able to treat every patient that is presented, but there is nobody who can do this in the ever-expanding field of equine medicine and surgery at a qualitatively acceptable level. Competence is an integration of knowledge, skills, attitude and experience. Can one call him/herself an equine practitioner when the time spent "hands on" a horse is only 1.5 hours a week? The answer is clear and the consequences are clear too: individual equine practitioners, practices, and also the universities will have to make choices. A viable option would be to create a network of equine healthcare centres that acknowledges the competence of the different players in the field at different levels. In such a network it would be important for the equine veterinarians to know the limits of their own competence and to know when and how to refer patients before those limits affect the quality of healthcare. Timely referral of cases becomes more necessary as diagnostic and therapeutic possibilities develop further and more rapidly and also with growing differences in levels of competence and experience in the group of equine practitioners, as evidenced in this study. Networks may be of great help also for the development of evidence-based veterinary medicine. Collecting, aggregating, analysing and displaying data on the processes of working and on the outcome of care is a new (management) skill that is badly needed and that is crucial to provide a solid base for evidence-based veterinary medicine (Berwick 1992, Cockcroft 2003).

It is concluded that most of the equine practices offer a multitude of services, but the bulk of work encountered in the average equine practice is restricted to a much more limited number of activities. This fact, together with the huge variation in "hands on" time spent by the equine practitioners, raises questions about the level and consistency of the quality of the service provided. It also raises questions about the economic viability of a number of activities, which is an item that will be addressed in a separate article. It is suggested that the formation of networks of equine veterinary healthcare, in which different practices and institutions provide equine healthcare at various levels and to a varying extent and with an adequate referral system between these players in the field, will bring the equine veterinary profession a great step forward.

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Chapter **4**

Does equine veterinary medicine pay off? A survey on revenues in current equine practices in the Netherlands

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Introduction

Progress in equine veterinary health care has been astonishing in the past few decades.

Colic surgery, arthroscopic surgery, osteosynthesis and other advanced interventions have become almost routine procedures in veterinary clinics throughout the world, vastly improving the prognosis of formerly often fatal conditions. Semen from the best stallions, dead or alive, is shipped all over the world and even embryo preservation and transplantation are routine procedures in certain practices.

These developments have been driven by personal interests, (scientific) curiosity, frustration, compassion and emotions, rather than by economic considerations. Economical aspects were of relatively little importance in those days when good, specialised equine veterinarians were scarce and highly respected, a position that enabled them to charge appropriate fees in recognition of the fact that economic viability is pivotal to the quality of (equine) veterinary care, and, related to this, to the quality of life of the (equine) veterinary practitioners.

However, the tide has turned and equine veterinary care has become a widely available commodity that has lost some of its aura, with excellence taken for granted. There are several reasons for this.

First, the population of horse owners has changed over the years. Lay people, often lacking any form of horsemanship, who use their horses for leisure and sports, substituted farmers and cavalrymen. Due to an economically good tide in Europe and North America the number of individual horse owners rapidly increased, as did the demand for equine healthcare that had to be ever more sophisticated, because human medicine and its achievements were taken as references. Much time and money were invested in veterinary practices in order to keep up with this increasing demand for knowledge and specific skills. In general, the client's attitude towards the horse has changed from pragmatic to emotion-driven. Treatment costs far in excess of the horses worth (and sometimes the client's financial possibilities) are not uncommon due to the emotional value of the horse (Blach 2003). Clients simply expect/demand a successful outcome and, not hampered by much insight of what can or can not be done to a horse, they judge the veterinarians not only by their veterinary service, but also by their customer service and price (Brown and Silverman 1999). Prices have become negotiable and clients easily travel with their horses from one vet to another .

Secondly, many new equine clinics have been constructed as the result of the joined efforts of veterinarians in traditionally agricultural practices who started investing time and part of the net profit in the equine section as a way of investing in future veterinary employment (Loomans *et al.*, 2007). In north-western Europe there is a severe loss of traditional markets for vets in the farm animal sector and practices become economically more dependent on the equine and companion animal

branches. These developments also attract a different kind of veterinary student in terms of agricultural background, gender, and attitude towards work and hours spent working (Koolmees 2000, Heath *et al.* 1996, Heath 2002).

These developments mean that market mechanisms can no longer be ignored in the competition for clients by the privately owned equine practices. There are already signs of wear and tear. Average income of equine veterinarians is falling behind incomes of other professionals (Brown and Silverman 1999, Cron *et al.* 2000). In addition, the profession also has substantial problems with occupational disability (Stembert 2003).

There is a clear need for a professional response from the equine veterinary profession. This response can only be given based on facts, as hard data rather than gut feeling, and it should form the basis of decisions in practice management. However, facts or hard data hardly exist, which makes research in this area urgent. The need for this type of research is increasingly recognised in the veterinary field, but, as yet, has largely been ignored.

Recently, a study has been performed on the workload and clinical skills in equine veterinary practices in the Netherlands (Loomans *et al.*, 2007) that provided previously unknown insights in market demand. One of the conclusions was that in certain aspects the perception of the equine practitioner of his or her workload was miles apart from the real situation. Questions were also raised about the economic viability of certain veterinary activities.

The present study uses the same set of veterinary practices as used in the first study, but now focuses on the economic aspects of these practices with special attention to the differences between mixed practices and better equipped and more specialised purely equine practices. It was hypothesised that the latter group would realise significant more revenues per unit of time invested in equine work, and per horse treated.

Material and methods

The equine sector and the veterinary profession in the Netherlands

For an overview of the Dutch equine sector and the veterinary profession see Loomans *et al.* (2007). Briefly, the equine industry is booming in the Netherlands, with emphasis on dressage, show jumping and driving. Standardbred and Thoroughbred racing are of relatively little importance. In the veterinary profession there is a tendency towards specialisation per species, which is formalised by qualifications as "acknowledged equine veterinarian" (AEV), or "equine specialist" either in reproduction, internal medicine or surgery. Currently (2003) there are 415 AEV's, and 63 national or international equine specialists in the Netherlands.

Experimental set up

The population of the study (carried out in January 2003) consisted of private veterinary practices where acknowledged equine veterinarians were at work. From this population a total of 34 (16%) of the practices were randomly selected, after blocking for region, single vet or multi-vet practice, equine or mixed practice, and registered equine specialists employed. The 34 practices employed 74 (22%) of the total number of AEV's.

The practices were approached by telephone, were sent a questionnaire and afterwards were visited for a personal interview of the AEV's and registered equine specialists by the first author (JBAL).

The questionnaire consisted of three parts; one concerning the practice situation, one with detailed questions on the specific veterinary skills practised, and one with personal questions to be filled in by each individual equine veterinarian.

Equine veterinary skills and their revenues

For the part on the veterinary skills and revenues a comprehensive list of 168 skills practiced in equine veterinary practice was developed, and for each of these skills the following questions were asked;

1. How often were these skills applied in your practice in 2002 (in numbers)?
2. Did in your perception this number change during the last five years? (five point Likert scale from 1 *very much decreasing* to 5 *very much increasing*)
3. How much time on average (in minutes), is involved in performing this skill?
4. How much do you charge (in euros excluding tax), on average, for the performance of this particular skill?

The total time involved per practice was calculated by multiplying the number of times a skill was applied (1) with the time involved (3).

Revenues received for applying skills per practice were calculated by multiplying the number of times a skill was applied (1) with the price charged (4).

The various skills were listed in different categories, mainly according to organ system. For each category the percentage of time accounted for and revenues received has been calculated as percentages of total time or total revenue.

Definitions used

-Time available for equine work (TAEW)

Time actually available within a year for an individual equine practitioner to do "horse work", independent of time spent on other species, other veterinary practice activities, holidays, illness, CPD, etc.

-Travelling time

At practice level time accounted for travelling to equine patients.

-Time "hands on"

At practice level time accounted for applying veterinary skills, excluding travelling time.

-Time charged for

Time charged for is the sum of time "hands on" and the travelling time, so the total amount of time accounted for in the practice management system.

-Time/revenue ratio

The time/revenue (t/r) ratio for a certain activity is calculated by dividing the time necessary for that activity (as a percentage of total time available) by the revenue generated by that activity (as a percentage of total revenue). A ratio higher than one means that the specific activity generates less revenue per unit of time invested compared to other activities in the practice. Conversely, a ratio lower than one indicates a higher relative financial productivity of that activity.

-Equine practices

Equine practices (EP), defined as: practices (or separate organisational equine units in large practice conglomerates) with only equine work. The level of the services may vary, and range from first consultations to referred cases.

-Mixed practices

Mixed practices (MP), defined as: practices where equine work is carried out at the level of first consultation and where equine work is only one of the many different kinds of veterinary work in this practice.

Comparison between (economically) best and worst practices

Revenues per unit of time invested in equine work ("hands on" or as TAEW) or per hour charged and revenue per patient registered were used as benchmarks for the economical assessment of the practices. Based on these criteria, the six best and six worst performing practices have been compared in an attempt to identify critical factors for (economic) success or failure.

Data analysis

Averages could not always be calculated over the total number of practices or practitioners involved. If a 0 was given as an answer, indicating for instance a certain skill was not applied in this practice at all, this figure was included in the calculation of the average and the standard deviation. If no figure was given because the question could not be answered due to unavailability of the information available in a particular practice, that practice has been excluded from the calculation of the average and standard deviation for this specific question.

For differences between equine practices and mixed practices, significance of the differences between averages was assessed using 95 % confidence intervals that take into account the calculated standard deviation and the number of practices involved.

Results

Changes in revenues and expenses in the last five years

Despite the fact that practices have been selected on the presence of at least one acknowledged equine practitioner, in the population of practices less than 50 % of the revenues turned out to be generated by equine work (table 1).

Table 1.

Average revenues and expenses of all (equine and mixed) practices in this survey (n=34), including the perceived change during the last 5 years.

	2002	Score changes
Revenues:		
Total	€ 1,087,253	4.0
Equine	45.4%	4.2
Companion animals	17.4%	4.1
Bovine	19.4%	2.8
Porcine	10.9%	2.6
Poultry	2.1%	2.1
Sheep	1.0%	2.5
Veal	0.6%	1.6
Other	3.2%	3.2
Expenses:		
Medical and professional supply	30.3%	3.5
Staff wages (owners not included)	13.9%	3.9
Housing	2.6%	3.6
General	8.0%	3.5
Financing	2.8%	3.4
Debiting	4.0%	3.4
Gross profit practice owners (incl. salary and R.O.I.)	36.7%	3.5

Perceived change is scored on a 5 point Likert scale, from 1 very much decreasing to 5 very much increasing.

Cattle, companion animals and to a lesser extent pigs contribute substantially more to gross revenue. Over the last five years the total revenue of the practice has grown, which was mainly due to growth in revenues on equine and small animal work. The contribution of farm animal work was declining over all species. Expenses had increased over the past 5 years, but not dramatically and no differences of importance between the cost categories have been reported.

Table 2 compares equine practices with mixed practices with respect to the percentage of estimated time involved in equine work and the percentage of revenues it generated. In mixed practices equine work generated revenues similar to other work, but in equine practices revenues from equine work are higher.

Table 2.

Comparison of estimated time spent on horse work as a percentage of total time available in the practice and total revenues generated at practice level.

	% of time spend on "horse work"	% of equine revenues	ratio time/ revenues
All practices in this study	36.9%	45.5%	0.81
Mixed practices	12.1%	12.5%	0.97
Equine practices	51.8%	62.2%	0.79

Note: Time for equine work is considerably less than 100 % in equine practices because this category includes large practices with a separate purely equine unit. The time/revenues ratio is a measure for the relative productivity of time invested in horse work.

Revenues on skills

Most revenues were generated by work on the locomotive system (27.2%), followed by the female genital tract (17.2%), pre-purchase examination (15.5%), alimentary tract and metabolic disorders (11.3%) and vaccinations (7.8%) (table 3).

Work on the locomotive system and the alimentary tract generates revenues in proportion to the time spent on it. Female reproductive work is the second largest activity in terms of time investment, but return in revenues is far below average. Pre-purchase examinations and work on the male genital tract generate proportionally more revenues per unit of time than other activities. These figures are overall figures for certain organ systems, but can be broken down further to the level of individual skills that are applied. For instance, with respect to the locomotive system, the general lameness examination (10% of the total time "hands on") has a t/r ratio of 2.3, radiology of 0.7 and arthroscopy of 0.4. For the alimentary system colic consultation has a t/r ratio of 1.6, colic surgery of 0.2, dental floating without sedation of 2.1, and rectal examination of 1.5. Most practised skills on the female

genital system are follicle checks (11 % of total time "hands on" with a t/r ratio of 1.6), pregnancy diagnosis (5 % of total time "hands on", t/r of 1.3) and uterine lavage with a t/r of 1.6.

Table 3.

Time, revenues and their ratio categorised according to organ system involved and to a number of not organ related activities as percentage of the total time "hands on" and of total revenues (n=34 practices).

	% time	% revenues	t/r ratio
Locomotive system	27.7	27.2	1.0
Female genital system	23.9	17.2	1.4
Alimentary system and metabolic disorder	11.5	11.3	1.0
(Pre purchase) examinations	10.6	15.5	0.7
Vaccination	5.7	7.8	0.7
Anaesthesiology	4.6	5.2	0.9
Respiratory system	2.9	2.6	1.1
Male genital system	2.7	4.4	0.6
Injuries and trauma	2.2	2.6	0.9
Identification, Registration, (Insurance)certificates	1.8	1.1	1.6
Skin	1.0	0.8	1.4
Euthanasia	0.8	0.8	1.0
Nervous system and sensory system	0.3	0.2	1.1
Circulation, blood and hematopoietic tissues	0.2	0.2	1.0
Urinary system	0.1	0.1	1.0
Rest category	4.0	2.9	1.4

Equine practices versus mixed practices

As expected, there are marked differences between equine practices and mixed practices with respect to specific equine accommodation and equipment. Equine practices have larger stable capacities and more technical facilities such as operation theatres, recovery boxes and inhalation anaesthesia equipment (including artificial ventilation and a variety of monitoring equipment). Furthermore, equine practices have significantly more often arthroscopic and endoscopic equipment at their disposal, but there are no differences with respect to laboratory facilities (clinical

chemistry, bacteriology, parasitology, semen examination), ultrasound and radiology equipment (table 4).

Table 4.

Average number of specific technical facilities available in equine and mixed practices.

	Equine n=21	Mixed n=12	Significant 95%
Stable capacity	12.1	1.6	*
Operating theatre	0.7	0.0	*
Inhalation anaesthesia	0.6	0.0	*
Anaesthesia monitoring equipment	0.6	0.0	*
Blood pressure equipment	0.3	0.0	*
Recovery room	0.8	0.2	*
Intensive care unit	0.3	0.0	*
Arthroscopic equipment	0.6	0.0	*
Outdoor riding arena	0.8	0.5	*
Indoor riding arena	0.3	0.0	*
Digital X-ray machine	0.1	0.0	*
Endoscopic equipment	0.9	0.4	*
Shockwave equipment	0.1	0.0	*

The practice time "hands on" in equine practices was 71.4 hours a month (s.d. 35.5), which differs significantly from the 34.1 hours a month (s.d. 18.8) in mixed practices. This is the time the equine practitioner earns him/herself a living by treating horses. Revenue per hours "hands on" can therefore be used as a benchmark tool to compare the economic success of practices. In equine practices the average total equine revenue per hour "hands on" was €196 compared to €209 for mixed practices. However, the individual figures show a wide range, varying from €42 (an equine practice) to €450 (a mixed practice). In practices with ambulatory work revenues also include fees charged for travelling. Travelling time, together with the time "hands on" is total time charged for. In equine practices average revenues per hour charged was €140, in mixed practices this figure was €150.

When calculated per time available for equine work (TAEW, which includes time that is not spent "hands on" applying certain skills, but that is available for practice equine-related activities), total equine revenue per TAEW in equine practices was €94 and in mixed practices €129. The lowest revenue was €35 (an equine practice) and the highest revenue €257 (a mixed practice).

Total revenue per horse registered as practice patient was €151 in equine practices and €110 in mixed practices. The range was between €18 (equine practice) and €433 (equine practice).

These last four parameters do not differ significantly between the two groups of practices (table 5).

Table 5.

Benchmarks for the comparison of equine and mixed practices.

Benchmarks:	Equine Practices	Mixed Practices	Sign. 95%
Monthly equine hours "hands on"	71	34	*
Equine revenues / Equine hours available	€ 94	€ 129	
Equine revenues / Equine hours "hands on"	€ 196	€ 209	
Equine revenues / Equine hours charged for	€ 140	€ 150	
Equine revenues / Equine patient	€ 151	€ 110	

*Note: * = significant difference*

Comparison of (economically) best and worst performing practices

Table 6 lists the six practices with three or more of the economical benchmarks significantly above average. Also listed are total equine revenues of the practice and the relative contribution to gross revenue of travelling time and the different groups of veterinary skills applied.

-*Practice I* is a 100% equine practice employing three AEV's, of which two full-time and one part-time. One of the practitioners is also an acknowledged pre-purchase examination vet. Fifty percent of the patients concern first consultations and 50 % are referral cases. The practice focuses on lameness in horses and mainly deals with sport horses, 80 % dressage, 10 % racetrack and 10 % leisure.

-*Practice II* is a mixed practice with equine revenues being 16% of total practice revenues. The practice employs 10 veterinarians, including three part-time working AEV's. It is a practice with 100% first consultations. The practice population consists of 33% sport horses, 33% leisure horses and 33% breeding horses. Almost all equine work is ambulatory and includes much reproduction and vaccination work and dental treatments.

Table 6.

Performance of six practices that had three or more of the economical benchmarks above average.

In the second part of the table the relative contribution to gross revenue of travelling fee and specific categories of clinical work are given.

Practice number	I	II	III	IV	V	VI
Equine revenues / Equine hands on hour	€ 244	€ 450	€ 397	€ 335	€ 247	€ 176
Equine revenues / TAEW hour	€ 204	€ 161	€ 257	€ 110	€ 92	€ 132
Equine revenues / Equine hour charged for	€ 242	€ 234	€ 252	€ 221	€ 209	€ 176
Equine revenues / Equine patient	€ 433	nn.	€ 98	€ 180	€ 176	€ 152
Mixed practice (MP) or Equine practice (EP)	EP	MP	MP	EP	EP	MP
Practice equine gross revenues	€ 650,000	€ 314,805	€ 29,500	€ 900,000	€ 1,500,000	€ 303,000

Revenues of travelling and groups of skills in % of total practice equine gross revenues

	%	%	%	%	%	%
Travelling fee	0.5	35.2	21.5	14.4	5.3	0.0
Locomotor system	78.9	5.1	4.2	22.3	46.2	12.8
Female genital system	0.7	20.8	5.4	11.5	3.8	13.1
Digestive system and metabolic disorder	3.0	4.9	17.2	2.7	10.4	1.2
(Pre) purchase examinations	2.9	3.3	9.4	25.7	12.1	57.3
Vaccination	1.5	22.8	23.9	7.0	3.9	0.0
Respiratory system	3.4	0.0	6.7	2.5	2.5	3.1
Male genital system	1.4	0.8	4.7	7.9	4.3	8.5
Injuries and trauma	2.2	0.9	3.6	1.5	1.6	0.0
Identification, Registration, (Insurance) Certificate	0.3	1.9	0.0	1.8	0.5	0.0
Skin	0.5	0.1	0.0	0.0	0.6	0.0
Euthanasia	0.2	0.5	1.3	0.4	0.9	0.0
Nervous system and sensory system	0.4	0.0	0.0	0.0	0.0	0.0
Circulation, blood and hematopoietic tissues	0.2	0.0	0.0	0.0	0.0	0.0
Urinary system	0.1	0.0	0.9	0.0	0.0	0.0
Other	3.7	3.8	1.0	2.2	7.6	4.0

Note: significantly higher figures than average indicated in **bold**, 95%, p=0.005

-*Practice III* is a 6-vet mixed practice with equine revenues contributing 5% to total practice revenues. There is only one full-time working AEV. It is a practice with 100% first consultations and with 40% sport horses and 60% leisure horses. All work is done ambulatory and consists mainly of vaccinations and general consultations.

-*Practice IV* is a 7-vet practice with a separate equine unit that generates 60% of total practice revenue. Five AEV's and two acknowledged pre-purchase vets are employed. It is mainly a referral practice but it does a fair amount of first consultation work as well. The patient population consists of approximately 30% sport horses, 30% leisure horses and 40% breeding horses. Besides a large number of pre-purchase examinations, much work is done on the locomotive system, including radiology, ultrasound and arthroscopic interventions. Equine reproduction work is done at the clinic and on site at equine studs. Standing castrations form a considerable part of the caseload.

-*Practice V* is a ten-vet practice of which the equine unit provides 75% of total revenues. It employs seven AEV's, five acknowledged pre-purchase examination vets and one registered equine specialist. The patient population includes 60% sport horses, 20% leisure horses and 20% breeding horses, which are mainly treated at the clinic. The practice's main focus is lameness diagnosis and treatment including arthroscopy, but also includes significant numbers of pre-purchase examinations, colic consultations, colic surgery, and dental work.

-*Practice VI* is a four vet mixed practice with equine revenues accounting for 30% of practice revenues and 2 AEV's (one full-time and one part-time). Patients are 75% sport horses and are mainly attended on the practice's premises. The most important activities are pre-purchase and lameness examinations, castrations and fertility work. The practice does not function as a referral centre.

Table 7 lists the six practices with three or more of the economical benchmarks significantly below average.

-*Practice i* is a mixed practice of five veterinarians (two part-time and the others full-time) with 15% of total revenues coming from equine work. The main source of income is work on cattle. One vet is an AEV, who does only ambulatory work, almost exclusively fertility work. The patient population consists of leisure horses, mainly used for dressage and driving.

-*Practice ii* is a single AEV mixed practice with 70% revenues derived from equine work and 30% from companion animal work. Sixty percent of the horses are leisure horses, 30% sport horses and 10% is breeding stock. Work consists of first consultations with relatively much trauma work, which is all done ambulatory.

-*Practice iii* is a two AEV equine practice, with 80% first consultations and 20% referral work. Patients consist of 40% sport horses, 30% leisure horses and 30% breeding horses. The equine reproduction work is done mainly ambulatory and some work is done at the clinic. Work on the locomotive system consists principally of consultations only with relatively little radiology.

Table 7.

Performance of six practices that had three or more of the economical benchmarks below average.

In the second part of the table the relative contribution to gross revenue of travelling fee and specific categories of clinical work are given.

Practice number	<i>i</i>	<i>ii</i>	<i>iii</i>	<i>iv</i>	<i>v</i>	<i>vi</i>
Equine revenues / Equine hands on hour	€ 123	€ 117	€ 102	€ 87	€ 95	€ 42
Equine revenues / TAEW hour	€ 73	€ 68	€ 77	€ 47	€ 52	€ 35
Equine revenues / Equine hour charged for	€ 89	€ 75	€ 68	€ 54	€ 95	€ 30
Equine revenues / Equine patient	n.n.	n.n	€ 134	€ 43	€ 87	€ 18
Mixed practice (MP) or Equine practice (EP)	MP	MP	EP	EP	EP	EP
Practice equine gross revenues	€ 81,000	€ 87,500	€ 267,500	€ 300,000	€ 130,000	€ 5,288

Revenues of travelling and groups of skills in % of total practice equine gross revenues

	%	%	%	%	%	%
Travelling fee	18.5	17.1	19.3	28.5	0.0	13.7
Locomotor system	0.0	11.1	13.8	9.2	10.0	0.0
Female genital system	73.2	4.5	24.5	32.1	36.6	0.0
Digestive system and metabolic disorder	2.8	10.1	11.5	6.4	9.5	66.0
(Pre) purchase examinations	1.2	3.7	7.4	4.3	7.2	0.0
Vaccination	0.0	17.1	8.5	8.4	14.1	9.2
Respiratory system	0.0	5.1	1.1	4.6	2.4	0.0
Male genital system	0.0	3.3	2.5	2.2	5.3	0.0
Injuries and trauma	0.0	21.5	1.7	1.6	5.5	0.0
Identification, Registration, (Insurance) Certificate	0.1	0.0	0.9	.1.	1.6	0.0
Skin	0.0	0.4	0.4	1.1	2.2	0.0
Euthanasia	0.2	1.6	0.4	0.2	0.7	0.0
Nervous system and sensory system	0.0	0.0	0.0	0.0	1.2	0.0
Circulation, blood and hematopoietic tissues	0.2	0.0	0.6	0.0	1.1	0.0
Urinary system	0.0	0.0	0.0	0.0	0.1	0.0
Other	3.7	4.4	7.3	0.4	2.3	11.1

Note: significantly lower figures than average indicated in **bold**, 95%, p=0.005

-*Practice iv* is a 3-vet 100 % equine practice, with 2 AEV's and one registered equine specialist. Patients consist of 30% sport, 45% leisure horses and 25% breeding horses. The work consists mainly of first consultations with a few referral cases. Most of the work is done ambulatory and there is a strong tendency towards fertility work with related activities such as castrations and pre-purchase examinations.

-*Practice v* is a two vet 100% equine practice, with one full-time AEV and one part-time vet. Patients are 15% sport horses, 35% leisure horses and 50 % breeding horses. By far the largest part of the work is fertility work and related activities. Most of the work concerns first consultations and is done ambulatory.

-*Practice vi* is a single vet 100% equine practice. The vet is a part-time working AEV, who does only dental work and vaccinations in sport horses. This work is for almost 100% ambulatory.

Discussion

Equine work is of increasing importance in veterinary practice. This is the result of two different processes. First, there is the increasing number of horses in western society and the changing status of the horse from work animal, *i.e.* economic factor, to pet or (expensive) equine athlete with the concomitant increase in willingness to invest in veterinary care for both categories. Secondly, there is an overall decrease in farm animal work, leading to a relative increase in the importance of companion animals and horses. From a mere professional viewpoint an increasing demand for good quality equine healthcare asks for investments in terms of time (*e.g.* continuing education courses) and money (specific equipment and/or accommodation). However apart from a competent professional, the equine veterinary practitioner is also an entrepreneur who has to earn a living for himself and his or her staff. That implies that decisions about such investments should not only be taken on purely veterinary grounds, but that the question of economic viability must be taken into account as well. However, there is very little known about the economic aspects of equine practice. In many practices it is impossible to separate the contribution of the various species to total practice performance and appropriate benchmarks that can serve as a basis for economic considerations are lacking.

This study presents a first attempt to i) evaluate the economical aspects of equine practice and ii) develop some benchmarks that may be useful to compare economic performance. It is acknowledged that these benchmarks are far from perfect. It would have been more interesting, for instance, to compare net profit generated by equine work than gross revenue, but the accountancy systems used by the various practices in this study did not permit this because specific equine costs could not always be separated from other costs. Also, income from the equine work remains hidden since in mixed practices practitioners only could provide their total income. Furthermore, it should be emphasised that this study only involves the time,

revenues and number of the applied skills and not the quality of the work that was carried out. Notwithstanding these and other limitations, we feel that the benchmarks developed in this study (equine revenue per equine hour available, per hour "hands on" and per hour charged, and, to a somewhat lesser extent, revenue per horse treated) are of some use to compare economic performance and may serve as first indications of the earning capacity of the various aspects of the veterinary work done in horses.

Compared to mixed practices, purely equine practices have significantly more accommodation and equipment at their disposal and they treat more horses on their own premises. On average, equine practices also have higher total equine revenues compared to mixed practices. This may be not surprising and is related to the fact that equine practitioners in these practices spend more time on equine work and that there are more equine practitioners working in these practices (average of 1.9 vs. 2.5 equine practitioners/practice). One could expect that equine practitioners in equine practices (with the extra facilities and equipment mentioned above) perform better in terms of revenues per hour "hands on", per charged hour, per TAEW or per horse than vets in mixed practices, due to more diagnostic work, (complex) surgery, "stable days", specialist work, intensive care, less travelling etc. This, however, is not the case. Apparently, equine practitioners in mixed practices are able to generate at least the same and sometimes even more revenues in the time "hands on" and available for equine work, with less equipment or accommodation, so inevitably with less costs. This may seem surprising, but one should keep in mind that over all practices the skills contributing most to practice revenues are the pre-purchase examinations (with and without radiology), follicle checks and pregnancy diagnosis, vaccinations, lameness examinations including radiology, arthroscopies, nerve blocks and ultrasound examinations, castrations, wound treatments, dental checks, colic consultations and colic surgery. Together these activities cover more than half of the accounted gross revenue. Facilities and equipment needed for performing these skills (with the exceptions of colic surgery and arthroscopy) are available in mixed as well as in purely equine practices and many of these skills can be performed ambulatory, discarding the need for clinic facilities.

The time/revenue ratio (or even better: the time/profit ratio if the available data would permit the calculation of such a ratio) seems to be a critical factor for the comparison of different styles of practice management. The practice with the highest revenue per hours "hands on" was a mixed practice that earned most of the equine revenues through vaccinations, equine fertility work, lameness investigations and travelling fee. The practice with the highest revenue per TAEW, also a mixed practice, earned most of its revenues through vaccinations, work on the alimentary tract (colic consultations), and clinical pre-purchase examinations. The practice scoring best on revenues per horse was an equine practice with almost 80% of the revenues coming from extensive lameness examinations. These practices have a few things in common. They have either made a choice in the kind of services they want

to provide (e.g. orthopaedics, pre-purchase examinations) and have invested accordingly, or they have, following the reasoning pointed out before, opted not to invest in accommodation or facilities and to do mainly ambulatory work, finding a good combination of skills with different time/revenue ratios and charging proper fees. The least performing practices tell a different story. These practices rely heavily on travelling fees and badly paying fertility work and apparently did not (yet) manage to find a good combination with other equine work with another time/revenue ratio. In some cases, where revenue per hour charged is low, it is clear that the fees are insufficient.

In near future, benchmarks as used in this study and/or comparable parameters will become more important if we take into account the growing relative importance of equine work and the expectation of an increase in diagnostic work and surgical work under general (inhalation) anaesthesia (Loomans *et al.*, 2007). This kind of work can only be performed in an equine referral clinic, with well-trained personnel, and adequate accommodation and equipment. The results of this study indicate that, in contrast to common feeling, equine practitioners who work in such practices generate the same revenues per hour "hands on" or TAEW as those who work mainly on the owner's premises or in a mixed practice with limited facilities. Even without exactly knowing the costs involved, it can be stated that this situation can only be maintained through a disproportionate time investment.

It is concluded that the benchmarks developed in this study can be used to compare the economic achievements with respect to revenues of equine practitioners independent of the kind of practice they work in. It is clear that equine practitioners do not have to invest heavily in accommodation and/or equipment in order to do well economically. In the same line, it shows that having a better-equipped practice or more accommodation does not guarantee extra revenues on a time or horse basis. This last observation indicates a potential pitfall for the ambitious equine veterinarian who wants to improve his or her professional performance, especially if fees charged are relatively low. It is clear that this study should be seen as a preliminary and indicative study. However, the results seem to warrant further research in this area, including the development of more accurate and precise benchmarks that can measure unequivocally the profitability of the various activities in equine veterinary practice. No sustainable development of professional skills and/or facilities is possible without a sound economic basis, which in itself is a "*conditio sine qua non*" for the well-being of the practitioner and, indirectly, for the quality of his or her work. Equine veterinary medicine may be seen as a vocation, but it should be regarded as business as well.

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Chapter 5

Quality of equine veterinary care: where can it go wrong?

A conceptual framework for the quality of
equine healthcare, based on court cases
against equine practitioners
in the Netherlands

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Introduction

In an increasingly litigious world, it is important to ask whether the standards of equine veterinary care meet client expectations, and whether there are adequate safeguards to prevent failure of care. Changes in society at large, and in the veterinary profession in particular, mean that the time is ripe for self-reflection. Unfortunately, the veterinary profession, unlike other commercial enterprises, does not have a tradition of monitoring either market demand or its own performance, and adjusting strategies and policy are inappropriate indeed. The profession only recently has begun actively accumulating information on the state of equine veterinary practice to assess market demand (Loomans *et al.* 2007a), and to examine the financial basis for and economic viability of equine practice (Loomans *et al.* 2007b). However, while such quantitative data are useful for evaluating socio-economic aspects of equine veterinary practice, they provide no information about the quality of care.

Quality of care and the measurement thereof is currently an important issue in both human and veterinary healthcare. As Blumenthal (1996) stated "In human healthcare, physicians thought they could be confident that they alone had a social mandate to judge and manage the quality of care, but now that mandate is contested daily in industrial boardrooms, legislative-hearing rooms, and even medical-consultation rooms". It is increasingly clear that this also applies to veterinary medicine. Veterinary quality control programs (De Groot and De Ruyter 2004) and codes of Good Veterinary Practice (FVE 2002) necessarily involve customer satisfaction and opinion and need to recognise the varying demands of different types of customer.

A conceptual framework to describe the quality of human healthcare as a whole was designed by Campbell *et al.* (2000). This system differentiated between the *structure* of the care system, the actual care given (*process*) and the effect of the health care system on an individual (*outcome*).

-*Structure* refers to physical and staff characteristics and involves resources like the number and location of practices, equipment, operating theatres and personnel, but also includes the way in which these resources are organised and managed. The latter includes opening hours, appointment systems, out of hours services, the spectrum of skills offered, and the efficacy of teamwork. The structural features essentially allow care to be offered, but do not guarantee that it is provided. Structure does, however, have a direct impact on the process and outcome of care.

-*Process* of care relates to the actual delivery, and consists of clinical and interpersonal care. Since clinical care should be "appropriate and necessary", it can be both overused and underused. Interpersonal care deals with the social and psychological interaction between patient (or client) and practitioner. An

indispensable skill in this respect is communication, the ability to build a relationship of trust, understanding and empathy with the patient and to show humanity, sensitivity and responsiveness. Patients (or owners) may want or demand an explanation and/or discussion about the symptoms, and want to be involved in the decisions taken (Donabedian 1980, Blumenthal 1996, Carmel & Click 1996, Woloshynowych, Valori & Salmon 1998).

-Outcome is the consequence of care, and can be seen as a measure of the effectiveness of structure and process. Two domains should be considered here: health status and user evaluation. Health status is linked to functional recovery and relief of a patient's symptoms, whereas user evaluation involves less strictly health-related elements of the process, like whether the patient's expectations have been met.

This overall concept for healthcare can be applied to equine veterinary practice. Of course, a complicating factor in the equine veterinary profession is the fact that the receiver of the clinical care, the patient, is the horse, while an extra party who will experience the service is the client who, in most cases, is the owner of the horse. Using the previously introduced concept for the quality of healthcare, the proposed definition of the quality of equine veterinary care would be whether a horse owner and his or her horse(s) can access the health service and receive the care that they need, and whether this care is effective. Accessibility and effectiveness can, of course, be related to the structure, process and outcome of healthcare. Accessibility entails aspects of the comprehensiveness, availability, continuity and affordability of care, while effectiveness relates to the knowledge and expertise of the veterinary and support staff and should ideally be founded on the principles of evidence-based veterinary medicine (Sackett, Rosenberg, Gray, Hayes & Richardson 1996, Cockcroft & Holmes 2003). In practice, veterinary care is more often based on legitimate societal and professional norms, rather than unbiased scientific evidence.

Many individual equine practices have developed tools to evaluate how their clients appreciate them. However, no systems have been developed for objectively measuring client satisfaction of the entire chain of equine veterinary care. In the Netherlands, an official veterinary statutory body, the Veterinary Disciplinary Tribunal (VDT) exists to handle complaints about the performance of veterinary practitioners either from individual owners or, in the case of suspected violation of veterinary laws and regulations, from a government-appointed veterinary complaints officer. The complaints dealt with by the VDT can be seen as a general, practice-independent and nationwide measure of client dissatisfaction with the veterinary profession. Clients filing a complaint against their equine veterinary practitioner have to have suffered serious emotional and/or financial damage to be allowed to continue with a complaint. For the current study, complaints related to equine veterinary practice in the period 1992-2004 were analysed using the quality of care concept outlined above in an attempt to identify elements of equine veterinary care vulnerable to

(accusations of) failure. Information about such "weak links" is instrumental to subsequent programmes to improve the quality of equine veterinary care.

Materials and methods

The Dutch veterinary judicial system

-Legal basis

The Act for Veterinary Practice ("Wet Uitoefening Diergeneeskunde" or WUD) of 1992, empowers animal owners and government officials to submit complaints about veterinarians to an official veterinary statutory body; the Veterinary Disciplinary Tribunal (VDT). The aim of the VDT is "to safeguard the quality of professional veterinary practice in the public interest", where the latter covers both the well being of animals and public health.

The legislator choose for an "open norm", meaning that the VDT, consisting of a lawyer and four veterinary practitioners, would establish jurisprudence on the basis of complaints submitted, and that they would subsequently form a frame of reference for the veterinary profession. In addition to cases from individual owners, a "complaints officer" is appointed by the Minister of Agriculture, Nature and Food Quality to file a complaint when it is suspected that animal health, or the structure of veterinary care, have been jeopardised in a broader sense.

When the WUD was introduced, it was intended primarily for the owners of food producing animals. However, since the act was created, the majority of complaints have come from the owners of companion animals and horses, although cases filed by the government complaints officer have related mainly to the care of food producing animals. Recently, however, the complaints officer has submitted several cases regarding the illegal use of medicines in horses.

- Procedure

Complaints from individual owners are commonly addressed initially to the Royal Veterinary Association of the Netherlands (KNMvD). The KNMvD performs a preliminary assessment and, where appropriate, informs the complainant of the channels for further action. The complainant subsequently contacts the VDT secretariat for information about the legal procedures. In 20-30 cases a year, after receiving the initial information, the complainant does not proceed with a full legal complaint. If a complaint is taken further, however, the legal procedure begins with the submission of a written complaint by the injured party. If the complainant has not been personally affected, the VDT will declare the case *inadmissible*, with the obvious exception of complaints submitted by the complaints officer. The next step is for the VDT to assess whether the complaint is formulated clearly and does indeed involve inadequate veterinary care. If not, the VDT will *dismiss* the case. If all of the requirements are met, the chairman of the VDT will initiate a formal investigation.

During this phase, the veterinary practitioner involved will be invited to respond and, if necessary, more information or evidence will be requested from both parties. Cases are handled in (public) court and both parties can request the presence of (expert) witnesses. The verdict of the court will be that the complaint is either *unfounded* or *valid*.

Finally, there is a Court of Appeal in case one of the parties disagrees with the decision of the VDT. The Court of Appeal consists of 3 lawyers and 2 veterinarians.

- *Sanctions*

If a complaint is declared valid, one of the following sanctions can be applied:

- a warning
- a reprimand
- a fine of up to € 2,269.00
- a temporary suspension of the right to practise veterinary medicine (maximum 1 year)
- a definitive disqualification from the right to practice veterinary medicine

As part of the sanction, verdicts may be published in the KNMvD journal, either anonymously or with the full name of the veterinarian involved.

Data collection and processing

Information on cases submitted to the VDT is made public once the case has been concluded and the case notes anonymized. In this study, all cases addressed between the inauguration of the VDT in 1992 and 2004 were analysed. Although cases relating to non-equids were not analysed in detail, they were used to put the equine data into perspective. The equine cases were classified according to organ system and/or specific veterinary skill applied, as described in previous studies (Loomans *et al.* 2007ab), and then further analysed with respect to the character of the complaint, the relative number of cases declared valid, and the sanctions enforced. Although the VDT had reached a verdict in all cases examined, some were still being dealt with by the Court of Appeal at the time of analysis.

Results

Number of cases

During the last five years the total number of complaints dealt with by the VDT varied from 64 - 80 per year, of which 11 - 25 % involved equine patients (Fig. 1). By far the largest number of complaints concerned small animals, followed by equids, farm animals and species-independent complaints (Table 1). Interestingly equine complaints were much less frequently dismissed than small animal complaints. Most of the 665 small animal related complaints concerned individual dogs (n=444) or cats (n=185). Species-independent complaints were mainly submitted by the complaints

officer and often concerned conditions in veterinary practices, use of non-registered pharmaceuticals or administrative inadequacies.

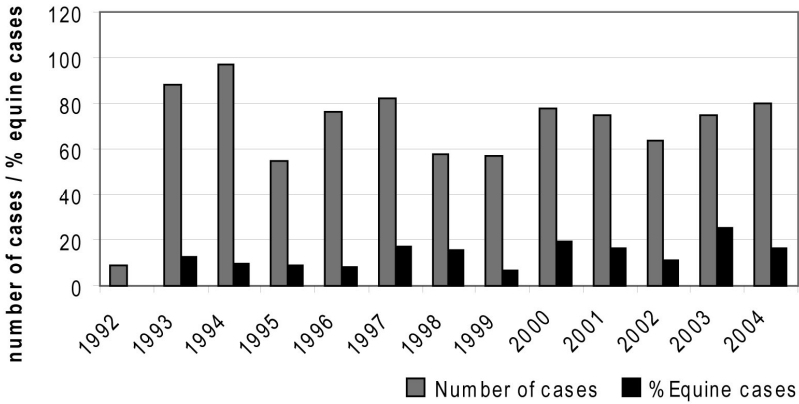


Fig. 1.

Total number of complaints brought to the VDT and the percentage of complaints relating to equine veterinary medicine in the period 1992-2004. Cases that were initiated but later withdrawn are not included.

Table 1.

Total number of complaints dealt with by the VDT in the period 1992-2004, according to species. Outcome is given in the categories inadmissible (I), dismissed (D), unfounded (U) and valid.

Species / group	n.	%	I	D	U	Valid	% Valid
Species-independent	23	2.8	1	2	1	19	82.6
Small animal	665	80.0	16	105	352	191	28.7
Equine	110	13.2	7	4	48	51	46.4
Farm animal	33	4.0	2	3	10	19	57.6
Total	831	100	26	114	411	290	34.9

Subjects of complaint

Table 2 presents the complaints directed at equine practitioners with respect to the organ system or category of veterinary skill involved. For comparative purposes, the mean amount of time spent by equine practitioners on these various categories, and

the proportion of total revenue generated (Loomans *et al.*, 2007ab), are also given. Whereas, on average, half of an equine practitioners time spent working hands-on with horses involves the locomotor system or female genital system, complaints handled by the VDT in these two categories account for only 24% of the total. By contrast, the alimentary system and pre-purchase examinations account for nearly 40% of all complaints, while activities in these categories account for little more than 20% of a veterinarians time. Both the female and the male genital systems account for approximately 10% of all complaints, whereas time dedicated to mare reproduction is about seven times that spent on stallions.

Table 2.

Equine complaints (number and percentage) categorised according to organ system and to a number of non-organ related activities. For comparative purposes the percentage of time spent on and revenue generated from the same categories reported earlier (Loomans *et al.*, 2007ab) are also given.

Category	n.	%	% time	% revenue
Locomotor system	17	13.8	27.7	27.2
Female genital system	12	9.8	23.9	17.2
Alimentary system and metabolic disorders	25	20.3	11.5	11.3
(Pre-purchase) examinations	21	17.1	10.6	15.5
Vaccination	0	0.0	5.7	7.8
Anaesthesia	3	2.4	4.6	5.2
Respiratory system	3	2.4	2.9	2.6
Male genital system	12	9.8	2.7	4.4
Injuries and trauma	8	6.5	2.2	2.6
Identification, registration, (insurance) certificates	1	0.8	1.8	1.1
Skin	2	1.6	1	0.8
Euthanasia	5	4.1	0.8	0.8
Nervous system and sensory system	2	1.6	0.3	0.2
Circulation, blood and haematopoietic tissues	1	0.8	0.2	0.2
Urinary system	0	0.0	0.1	0.1
Injection site abscesses	3	2.4		
Veterinary drug use	7	5.7	4	2.9
Animal welfare	1	0.8		
Total	123	100.0		

Table 3.

Valid complaints categorised according to organ system involved or non-organ related activities, cause of complaint and sanctions administered.

Category	n.	n.	Cause of complaint	Sanction	n.
	total	valid			
<i>Alimentary system</i>	25	10			
Colic consultation		6	Responding too late; inadequate or late action; failure to refer.	Warning Fee	5 1
		3	Sending unqualified staff.	Reprimand Fee	1 2
Oesophagus obstruction		1	No visit despite urgent situation.	Warning	1
<i>Pre-purchase examination</i>	21	13			
Pre-purchase examination		11	Incomplete examination and registration.	Reprimand Warning Fee + suspension	4 4 3
		2	Inappropriate interpretation of radiographs.	Reprimand Warning	1 1
<i>Locomotor system</i>	17	6			
Lameness investigation		5	Wrong conclusion after incomplete examination.	Reprimand Warning Fee	3 1 1
		1	Inappropriate information to owner.	Warning	1
<i>Female genital system</i>	12	5			
Parturition		3	Lax attitude of veterinarian in a case that needed urgent action.	Reprimand Warning	2 1
Gynaecology		1	Veterinarian took unacceptable risk.	Warning	1
Retentio Secundinarum		1	Lax attitude of veterinarian.	Warning	1
<i>Male genital system</i>	10	3			
Cryptorchid		2	Inadequate cryptorchidectomy.	Reprimand	2
Castration		1	Lack of adequate aftercare.	Warning	1
<i>Injuries and trauma</i>	8	4			
Wound management		4	Lack of initiative and/or insufficient diagnostic work-up.	Reprimand Warning Suspended	1 2 1
<i>Medicinal Products</i>	8	6			
Use of unregistered drugs		4	Illegal drug use.	Fee	4
Product information		1	Providing insufficient information.	No penalty	1
Wrong use of drugs		1	Use of inappropriate drugs.	Warning	1
<i>Anaesthesia</i>	3	1			
Anaesthetic protocol		1	No pre-anaesthetic evaluation.	Reprimand	1
<i>Euthanasia</i>	5	1			
Euthanasia		1	Failure to act on euthanasia request.	Warning	1
<i>Skin</i>	1	1			
Dermatology		1	No information on contagious dermatitis.	Warning	1
Total	110	51			

Verdicts and sanctions

In table 3, the 51 cases against equine practitioners brought before the VDT and declared valid are summarised in terms of the nature of the offence and the sanctions enforced.

In the largest category (alimentary system), 10 of 25 cases (40%) were declared valid; most concerned horses with colic that received inadequate attention. Of the colic cases declared valid, 4 were referred to the Court of Appeal, but none of the verdicts was overturned. The second largest category of complaints resulted from pre-purchase examinations. Moreover, more than 60% of complaints in this category were found to be valid and this was the only category in which the, relatively, heavy penalty of a fee plus (temporary) suspension was administered. Of the valid complaints, two involved incorrect interpretation of radiographs, while the other eleven resulted from incomplete examination and/or registration. Similarly, in the complaints related to the locomotor system (35% valid) it was incompleteness of work (resulting in the wrong conclusion) that was the main source of dissatisfaction. A final special category of complaints was the use of unregistered pharmaceuticals; seventy-five percent of cases submitted to the VDT in this category were declared valid. Moreover, complaints in this area are increasing in number. In 2004 alone, the complaints officer filed four complaints on behalf of the government against equine veterinary practitioners for illegal use of medicine; the VDT judged all four complaints valid.

Court of Appeal

Altogether twenty equine cases were directed to the court of appeal, nine by the client and eleven by the practitioner. Only four client appeals and five practitioner appeals were awarded.

Discussion.

Most disputes arising as a result of client dissatisfaction with the performance of a veterinarian are settled on the spot, without recourse to the courts. Indeed, an increasing number of practices have a set procedure for dealing with errors and/or dissatisfaction, and many also conduct surveys to monitor client satisfaction. It also appears that client dissatisfaction increasingly stems from a lack of knowledge or "horsemanship" on the part of the present day horse owners. As Bramlage (2004) suggested, "In our increasingly urban society a love of the spirit of the horse has largely replaced familiarity with the individual. Horsemanship has been replaced by an abstract reverence for the horse that borders on passion, but is rooted more in the cinema than the corral. It is our goal to temper this enthusiasm with understanding, but without dampening it, and to assure that it is channelled to the benefit of the horse, not it's detriment". For instance in most of the pre-purchase

examination complaints that were declared unfounded in the current survey, the new owners were disappointed simply because the purchased horse did not meet their expectations and blamed the veterinarian for this short coming. Moreover, many horse owners do not know what to expect from a veterinarian, and therefore depend largely on the opinion of layman friends, trainers or internet sites. For this reason, "involving" clients by educating them, as well as being important for the welfare of the horse, may help them to better understand what their veterinarian does, or could do. Explaining clinical procedures, findings, diagnosis and therapy, preferably in writing, may take a lot of time, but is indispensable in modern equine practice largely because it helps tempering unrealistic expectations and can thereby prevent a dispute ever existing between the owner and the veterinarian.

Of course, because cases only reach the VDT if the dispute cannot be settled between owner and veterinarian in the first instance, the cases examined in the current study are likely to be the tip of the iceberg. Nevertheless, these cases provide valuable information about the causes of serious client dissatisfaction, not least because considerable effort is required on the part of the complainant to pursue a case. Owners are therefore not likely to initiate a procedure light-heartedly; a conclusion borne out by the fact that equine cases are seldom dismissed.

The mean of approximately 70 complaints a year for the 3000 Dutch veterinary practitioners is high compared, for example, to the 900 cases a year against the 60,000 medical practitioners in the Netherlands. However, the number of complaints against equine practitioners is comparable to that against the companion animal vets, when related to the numbers of dogs (approx. 1.7 million) and horses (approx. 440,000) in the country. On the other hand, the percentage of equine cases declared valid (47%) compares unfavourably with that in the companion animal sector (28%), and to that in human medicine; during 1992-2004 15% of all complaints brought to the Medical Disciplinary Tribunal were judged valid (Leusden van *et al.* 2005).

Importantly, the cases examined in this study can readily be analysed with respect to the conceptual framework for quality of human healthcare proposed by Campbell *et al.* (2000), and which discriminates between *structure*, *process* and *outcome* of care. Good health care *structure* implies efficient and effective care that is easy for clients to access. In this respect, the dense network of equine practices in the Netherlands guarantees the physical proximity to suitable facilities. However the complaints submitted indicate that care is not always provided in time or at the appropriate level, both examples of structural failure. Valid complaints included the late (or absent) response of an equine practitioner to an emergency situation such as colic or parturition, and even the sending of unqualified staff. Another aspect of structural ineffectiveness is when practitioners fail to refer even when it is indicated and a referral centre is within reach. These structural failings were noted and condemned by the VDT and have resulted in the following normative jurisprudence:

- A practitioner on duty must be traceable and contactable by telephone.
- A practitioner on duty cannot be replaced by a para-veterinarian.
- A practitioner is expected to refer a patient if he does not believe he is capable of providing the necessary treatment.
- If multiple emergencies arise simultaneously, the practitioner is entitled to make a selection (triage) on the basis of his personal assessment of priority.

A noteworthy and important area of complaint is the use of non-registered drugs. Complaints in this category were primarily brought to the attention of the VDT by the complaints officer, and nearly all were judged valid. The significance of these cases is that the accessibility of veterinary medicinal products, an indispensable part of equine veterinary health structure, is under threat. The spectrum of drugs registered for use in horses in the Netherlands is very small. In addition, there are big differences between EU member states with regard to which drugs are registered for horses; drugs registered in one country may not be registered in another. Moreover, products used legally in the past have subsequently been declared illegal. In many instances, the illegal drug used was phenylbutazone, a NSAID used legally in countries such as Belgium, Germany and the United Kingdom. The changes in the legislation relating to medicine use has caused considerable confusion amongst both equine practitioners and horse owners, and the latter can not or will not understand why registered products cost more. To a degree, the recent inclusion of the European Act on Veterinary Drugs in the national legislation of EU member states (November 1st, 2006) should help overcome these problems. What has not changed however, is the fact that the number of horses in the EU is relatively small, such that there is little incentive for pharmaceutical companies to invest heavily in research and the registration of equine drugs in Europe.

With respect to the *process* of health care, it is clear that incompleteness or inaccuracy in subsidiary procedures such as furnishing the owner with appropriate information, leads to more complaints than actual failures of veterinary technique. A typical example in this respect is the complaints related to pre-purchase examinations. Eleven of the 13 valid complaints related to incomplete or inaccurate examinations, while only the 2 involving incorrect interpretation of radiographs could be attributed to true technical failures. Interpersonal communication is of particular importance in avoiding this type of problem; a practitioner needs to create a relationship of trust and understanding with both the buyer and seller. A thorough, complete pre-purchase examination that is well documented and culminates in a balanced judgement will not create false expectations with respect to the horse being sold. On this subject, the VDT is quite clear in its jurisprudence, and has issued the following statements:

- In the case of a pre-purchase examination, the buyer is also an interested party and can submit a complaint even though he/she might not have commissioned the examination personally.

- All aberrations from the normal situation have to be reported and taken into consideration when arriving at a conclusion. This conclusion should take into account the proposed use of the horse and should be unequivocal.
- Tampering with a report is malpractice and can lead to criminal prosecution.

In other situations, there is a more even division between inadequacy in the transfer of information, or in the completeness and accuracy of a performed procedure. Examples include incomplete examination in the case of traumatic wounds, incomplete pre-anaesthetic examination, insufficiently informing the owner about the consequences of off-label drug use, etc. Although information and consent provided by the owner are of paramount importance for good veterinary care, jurisprudence suggests that the practitioner is not entirely answerable to the client. The VDT recognises the right of a practitioner to hold his or her own ethical standpoint, for example in the case of a request for euthanasia, and a practitioner is not only entitled, but required, to take appropriate action in emergency situations, even when the owner cannot be contacted. With respect to the actual quality of the work delivered, it is interesting to note that the VDT is of the opinion that owners are right to have higher expectations if the practitioner is more highly qualified. This was stated unequivocally in the verdict on two cases where a cryptorchidectomy has been carried out incorrectly, by a board-certified specialised equine surgeon.

Although the *outcome* is the end-product of health care, a distinction should be made between an objective technical assessment and a more subjective appreciation of the result by the client i.e., the assessment of outcome will differ depending on whether it is made by the medical or veterinary profession or by the patient or client. As Hartelow (2003) noted, "Patients will focus on health gains, satisfaction or well-being on the one hand and on their wants, needs and expectation on the other; the medical professional will judge the effect of medical interventions against a background of scientific knowledge of its possibilities". In fact, the inventory of VDT complaints can be seen as a user evaluation on the outcome of sub-optimal equine veterinary care. Figures on the more positive aspects of the outcome of equine health care are not readily available for the horse population in either the Netherlands, or in other countries. For this reason, the current study evaluated the quality of equine veterinary care in terms of structure and process, but not on outcome. In any case, measures of the process are better indicators of the quality of care, if improvement of the health care system is the ultimate aim, because processes are largely under the control of health professionals and can be altered relatively rapidly (Campbell *et al.* 2000).

It is concluded that a conceptual framework for assessing the quality of healthcare based on structure, process and outcome, is a useful and applicable means of evaluating the quality of equine veterinary care. Applying this framework to equine cases brought before the VDT (a forum for client dissatisfaction) demonstrated that the (lack of) availability of adequate veterinary care in emergency situations and out-

of-hours is one of the most important structural problems in equine veterinary care in the Netherlands. In a procedural sense, failure to perform a complete examination or to correctly and adequately inform the client were the most common causes of client dissatisfaction. This study indicates areas for improvement in equine veterinary care in the Netherlands and provides a format for assessing the quality of (equine) veterinary health care elsewhere.

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Chapter 6

Quality of equine veterinary care: client satisfaction in equine top sports medicine in the Netherlands

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Introduction

In a recent study of the status of the equine veterinary profession in the Netherlands the quality of veterinary care was measured through the analysis of court cases against equine practitioners as a measure of client dissatisfaction (Loomans 2008a). This was done using a conceptual framework that has been designed to describe the quality of human healthcare (Campbell et al. 2000). This method differentiates between the structure of the care system, the actual care given (*i.e.* the process) and the effect of the system on an individual (outcome). That study showed that technical faults were only infrequently the reason for complaints about veterinary care. Poor communication, failure to comply properly with administrative obligations and improper and/or illegal use of medicinal products scored as principal reasons for court cases filed against equine vets.

Quality of care cannot be judged fully if only a negative outcome parameter (in this case complaints) is used, as this approach will give information about which aspects of the care are dissatisfying but does not give an answer to the question if the care offered is comprehensive enough and whether it sufficiently satisfies the needs of the client, in this case the horse owner.

The present study investigates the status of the equine practitioner with respect to client satisfaction from the perspective of demand. It is recognized that needs and demands in the equine veterinary profession vary widely depending on the type of client and the horses involved. As it is impossible to investigate demands and the degree to which those demands are met for all possible subpopulations of end users of equine veterinary care, it was decided to focus on the group that can probably be seen as the most challenging of them all: the top segment of the most important equestrian disciplines in the Netherlands. To this end, a survey focusing on the quality of equine veterinary care was performed in three categories of relevant parties in this top segment of equestrian activities: the riders, the national coaches and the team vets of the most popular disciplines.

As in the earlier study, attention is focused on the structure, the process and the outcome of care. The aim of this study was to systematically evaluate the quality of equine veterinary top sport medicine and the degree to which the expectations in the field are met, as viewed by the three categories mentioned in order to identify existing deficiencies in veterinary care and to suggest possible avenues along which service and demand can be made to match better.

Materials and methods

The equine industry in the Netherlands

Equestrian activities have become extremely popular in the Netherlands over the past decades. A recent study (Anon. 2006), showed that 456,000 people over 8 years of

age were involved actively in equine sports or leisure activities (for a minimum of 5 years at least one day/week), of which 81,100 people were involved in competition riding. The most popular disciplines are dressage and show jumping, the interest in which is considerably boosted by Dutch successes at international events such as the Olympic Games where gold, silver and bronze medals were won in 1992, 1996, 2000, 2004 and 2008. The governing body of all equine disciplines, except for racing, is the Royal Netherlands Equestrian Federation (KNHS) that has become the fifth largest sports federation in terms of member number in the Netherlands, and is still growing (188,000 members in 2006, 196,000 members in 2007) (KNHS 2008). The KNHS is responsible for the overall organization of equine sports in the Netherlands, issues rules and regulations (in accordance with the "Fédération Equestre Internationale", F.E.I.), facilitates national and international equine competitions, and selects the different equestrian teams representing the Netherlands at international events. This includes the appointment of team trainers, coaches, team veterinarians and other supportive staff.

Study design

The KNHS provided a data base for this survey of equine sportsmen and sportswomen (n= 216) of teams in the categories senior, junior, young riders, horses and ponies in the disciplines of dressage, show jumping, eventing, endurance, reining, driving and vaulting. The interviewees included the top level competing at international events (A level) and the levels just below (B and C levels). A list of coaches of the different teams and of the team vets was also supplied. In December 2007, all persons involved received a personal e-mail from the KNHS top sport managing director with the request to complete the questionnaire that was simultaneously sent out to all riders, drivers, vaulters, team coaches and team vets, accompanied by a letter of recommendation from the first author as a representative of the Department of Equine Sciences. In the email the importance of this survey was stressed as a means to optimize veterinary support of the equine athlete. In January and February 2008, a reminder was sent by email by the top sports managing director. Entry was closed by the first of March 2008. The questionnaires were anonymous, but numbered and the number was linked to a name list available to the first author. The list was destroyed when all information was available in March 2008.

The questionnaire

Three different questionnaires were developed, one for the sportsmen and women, one for the team coaches and one for the team vets. The first part of the questionnaire for the sportsmen and woman included questions on the discipline and category of competition, frequency and location of contact with private equine veterinarians and team vets and the interaction between the two. It also asked about which criteria they employ to choose their private equine veterinarian, and what in their opinion the standards should be for a good equine sports medicine vet. Further,

the interviewees were asked if and which veterinary knowledge or skills were lacking or insufficient with respect to their own discipline. The second part of the questionnaire consisted of two lists. The first list specified 47 specific equine veterinary actions and participants were asked if these were ever performed on their horse and, if so, whether this was done by their own private vet or by someone else. Interviewees were further asked how satisfied they were with this specific veterinary performance, and if they considered it an important skill for an equine sports veterinarian. The second list consisted of 14 subjects for equine veterinary consultancy related to equine sports. Participants were asked if they consulted their own vet for these matters or someone else and again how satisfied they were with the consultation and if they considered knowledge in this area to be important for an equine sports veterinarian. Satisfaction could be scored on a 5 point Likert scale, where 1 = very unsatisfactory, 2 = unsatisfactory, 3 = indifferent, 4 = satisfactory and 5 = very satisfactory. Team coaches were questioned about their discipline and category, and their interaction with (equine) athletes, team veterinarians and private veterinarians. They were also asked about the contribution of these vets to specific subjects such as training schemes, transportation of horses, vaccinations, use of veterinary medicinal products, prevention and treatment of injuries etc., and to the eventual compilation of the team. Finally they were asked which specific aspects of optimal equine veterinary care were missing or needed attention in their view, also in comparison with other (foreign) teams.

Team veterinarians were questioned about their discipline and category, the interaction with the (equine) athletes, team coaches and private veterinarians and frequency and intensity of visits to stables and training facilities of individual riders. They were asked to what extent they contributed to specific subjects such as training schedules, treatment and prevention of injuries, rehabilitation, competition schedules, nutrition, transport, animal welfare, etc. Here again there were questions about their view of possible suboptimal equine care and what suggestions for improvement they had.

Analysis of the questionnaires, calculation of the averages, percentages and the production of the frequency tables was carried out by SPSS* software for descriptive statistics.

Results

Response

The overall response of the sportsmen and women was 36.1%. Table 1 provides some more detailed information with respect to the different disciplines. The seniors of the A group were very well represented as well as the endurance and driving disciplines. All team veterinarians (n=7) responded. Of the team coaches, 10/11 (91%) responded, four responsible for the different dressage teams, two for jumping, two for eventing, one for driving and one for vaulting.

Table 1.

Numbers of sportsmen and sportswomen divided per discipline and per level as provided by the KNHS and (in brackets) the numbers of responders.

	Dressage	Jumping	Eventing	Endurance	Driving	Reining	Vaulting	Total	Response	%
A-Senior	8 (3)	8 (3)	2 (0)	8 (6)	18 (12)	3 (1)	3 (1)	50	26	52.0
A-Junior	7 (2)	5 (3)	4 (1)	0	0	0	0	16	6	37.5
A-Young rider	7 (2)	5 (1)	3 (1)	2 (0)	0	0	0	17	4	23.5
A- Ponies	7 (2)	3 (1)	3 (1)	0	8 (3)	0	0	21	7	33.3
B-Senior	1 (1)	15 (3)	12 (6)	4 (2)	18 (6)	4 (1)	1 (0)	55	19	34.5
B-Junior	0	7 (2)	4 (0)	0	0	0	0	11	2	18.2
B-Young rider	2 (1)	13 (4)	3 (2)	0	0	0	0	18	7	38.9
B-Ponies	2 (0)	1 (0)	10 (3)	0	5 (3)	0	0	18	6	33.3
C-Senior	0	0	10 (1))	0	0	0	0	10	1	10.0
Total	34	57	51	14	49	7	4	216	78	
Response	11	17	15	8	24	2	1	78		
%	32.4	29.8	29.4	57.0	49.0	28.6	25.0	36.1		

Table 2.

Performances of professional equine veterinary skills including satisfaction scores. Satisfaction is scored on a 1 – 5 Likert scale, whereby 1 is very unsatisfactory and 5 is very satisfactory.

	Performed for this rider/driver	Performed by own vet	Satisfaction 1 -5	Performed by someone else	Satisfaction 1 -5	Should be a skill of equine veterinarian
Professional Equine Veterinary Skills:	%	%		%		%
Identification transponder and EU passport.	98.7	74.3	4.4	28.4	4.3	84.4
FEI passport.	98.7	68.5	4.2	37.0	4.1	88.9
Vaccination.	98.7	85.3	4.5	16.0	4.1	93.0
Examination and treatment of lameness	89.3	69.7	4.4	42.4	4.5	100.0
Dental work.	87.3	30.5	4.3	74.6	4.7	64.7
Wound management.	84.3	89.7	4.5	25.9	4.0	97.0
Pre-purchase examination (incl. radiology).	84.0	63.9	4.5	42.6	4.2	90.0
Ultrasound of tendons, ligaments and joints.	81.9	56.9	4.4	46.6	4.4	97.3
Pre-purchase examination (clinical only).	81.3	60.7	4.5	42.6	4.2	92.7
Examination and treatment of respiratory problems.	79.2	83.3	4.3	23.3	4.4	100.0
Examination and treatment of colic and diarrhea.	78.9	89.8	4.5	32.2	4.6	97.3
Blood test and interpretation of results.	77.9	83.1	4.2	30.5	4.3	95.1
Radiology of the extremities.	77.5	65.4	4.4	44.2	4.3	91.2
Treatment of tendon injuries.	75.7	58.0	4.5	52.0	4.5	97.0
Prepare a horse for export.	71.4	54.2	4.5	45.8	3.3	55.0
Examination and treatment of skin problems.	69.9	88.0	4.3	18.0	4.3	97.0
Castration.	63.6	75.6	4.2	29.3	4.1	91.4
Treatment of joints and tendon sheaths.	62.9	53.5	4.6	48.8	4.5	96.8
Examination and treatment of myopathies	62.5	70.5	4.2	36.4	4.1	100.0
Treatment of back problems.	61.4	47.6	4.6	59.5	4.4	90.6

Endoscopy respiratory tract.	60.6	66.7	4.5	42.9	4.3	91.7
Routine check sport horses at training facilities.	59.7	73.9	4.7	32.6	4.4	87.5
Sedation for transport, dental work etc.	55.6	84.6	4.5	20.0	4.6	78.4
Euthanasia of a horse.	55.6	69.2	4.5	30.8	4.5	94.3
Examination and treatment of insufficient performance.	54.1	61.5	4.3	41.0	3.8	80.0
Examination and treatment of behavioral problems.	51.4	83.8	4.3	27.0	4.0	83.3
Physiotherapy.	48.6	17.6	4.4	77.1	4.2	27.0
Radiology of back and pelvis.	44.9	51.6	4.6	45.2	4.6	81.3
Colic surgery.	43.9	25.9	4.1	81.5	4.2	77.4
Acupuncture.	41.7	27.6	4.1	73.3	4.1	37.8
Homeopathy.	36.6	36.0	4.3	72.0	4.4	50.0
Radiology of head and thorax.	34.8	63.6	4.3	36.4	4.8	75.9
Treatment of a mare in heat.	33.3	66.7	4.4	38.1	3.4	93.5
Heart echo (heart film).	32.4	31.8	4.6	59.1	4.5	80.0
Manual therapy.	31.9	22.7	3.8	77.3	4.3	30.3
ECG heart check.	30.9	38.1	4.5	57.1	4.3	80.0
MRI scan.	30.2	33.3	4.5	55.6	4.6	76.0
Shockwave therapy.	28.3	23.5	4.3	70.6	4.1	89.3
CT scan.	28.1	50.0	4.4	55.6	4.5	76.0
Operation for laryngeal hemiplegia.	26.2	41.2	4.0	52.9	4.0	72.4
Scintigraphy.	23.0	35.7	4.2	57.1	4.6	75.0
Examination of the male genital tract.	22.6	61.5	3.9	30.8	5.0	82.8
Arthroscopy.	22.4	61.5	4.4	30.8	4.5	82.1
Hyperinfusion in case of respiratory problems.	21.2	46.2	4.3	46.2	4.3	81.3
Cryptorchidectomy.	18.8	58.3	3.8	50.0	4.0	82.1
Operation for crib-biting and windsuckeing (Forssell)	17.2	36.4	4.0	54.5	3.8	65.5
Embryo transplantation.	11.3	0.0	0.0	83.3	4.3	69.0

Equine sportsmen and sportswomen

The multidisciplinary character of veterinary medicine in sport horses is reflected in tables 2 and 3. A minority (36%) of equine sportsmen and sportswomen had a single veterinarian, who addresses all occurring problems, but 64% used different vets or para-veterinary therapists for different interventions and services, such as ultrasonographic examination and treatment of tendons and ligaments, pre-purchase examinations, a variety of surgical procedures, more complex diagnostic examinations, dental work and embryo transplantation. For interventions outside the classical domain of veterinary care, such as treatment of back problems, physiotherapy, acupuncture, homeopathy and manual therapy a large number of licensed and unlicensed therapists is used. Average scores on satisfaction were over all high, for both the own private vet and for other suppliers of additional veterinary care (table 2).

How do clients appreciate their own equine veterinarian and what do they expect from him or her? Sixty-four percent of the riders/drivers considered it important that their vet is familiar with treating sport horses and that he or she also visits other sports stables, 17% considered this not so important and for 19% it was unimportant. Fifty-six percent acquired their actual equine vet by recommendation of friends, colleagues or other vets, 20% selected an equine vet for geographical reasons and 17% had their vet already working for them satisfactorily for a long time. A foreign equine vet was consulted by 32% on a regular basis, by 22% occasionally and never by 45%. Reasons for consulting a foreign vet were the good quality of work delivered (48%), the specialisation in equine sports medicine (32%), a long-lasting relationship (11%) and geographical reasons (9%).

Another important person is the appointed equine team veterinarian. Whereas only 7 responders (9%) never spoke or meet an equine veterinarian, 34 of them (44%) had never met the team vet or were contacted by the team vet concerning the health of their horse(s). Table 4 provides more information about the contact between the sportsmen and equine veterinarians in general, their contact with the team veterinarian and the locations where they meet. Thirty-four percent of the sportsmen indicated that there is a good relationship between the team vet and the private vet. In the jumping and eventing disciplines, the team vet is often also the private vet. However, the majority of the responders did not know if there is any interaction at all, or believed there is no contact, or considered the contact to be unsatisfactory. If present, contacts are believed to be principally associated with (veterinary) problems, not with other performance influencing items. In any case, it became clear that the relationship between the team vet and the responder's own vet was considered to be far from optimal in many cases.

Table 3.

Providing professional equine veterinary information including satisfaction scores. Satisfaction is scored on a 1 – 5 Likert scale, whereby 1 is very unsatisfactory and 5 is very satisfactory.

Professional Equine Veterinary Information:	Needed for this rider/driver %	Obtained from own vet %	Satisfaction 1 -5	Obtained from someone else %	Satisfaction 1 -5	Should be obtained from equine veterinarian %
Rehabilitation after injuries.	87.8	69.8	4.4	41.9	4.3	97.6
FEI veterinary regulations.	86.5	66.7	4.1	42.4	3.9	97.6
Prohibited substances and withdrawal time.	84.0	79.3	4.0	35.1	4.1	100.0
Training/exercise.	75.0	52.8	4.1	42.3	3.8	84.6
Vaccination.	71.2	96.2	4.4	15.1	4.2	97.5
Feeding.	68.9	72.9	4.1	35.4	3.9	83.3
Parasite control.	67.6	91.1	4.6	15.2	3.5	88.9
Horse shoeing.	64.9	40.4	4.2	56.5	4.4	67.6
Discipline specific veterinary problems.	64.4	57.5	4.4	35.0	4.0	83.3
Animal welfare.	52.0	75.0	4.1	25.0	4.0	88.2
Transportation of horses.	51.4	74.3	4.3	23.5	3.5	80.0
Competition schedule.	43.8	34.5	4.3	41.4	3.9	43.3
Housing.	32.9	61.9	4.2	25.0	4.0	62.5
Riding and driving tack.	30.6	16.7	3.3	58.8	4.2	43.3

Table 4.

Contacts with equine veterinarians concerning a horse in competition in general, specifically with the team vet and location where these contacts take place (for both private vet and team vet).

Frequency:	In general	With team vet	At stable	At clinic
Never	7	34	13	27
Few times a year	28	30	34	35
Once a month	31	11	25	13
Few times a month	12	3	6	3
Total	78	78	78	78

From the answers to the open questions a general picture of the required skills and specific knowledge of the team vet, as viewed by the riders and drivers, emerged. The team vet's principal tasks and qualities were considered to include:

- Checking, supporting and supervising horses before and during championships and/or international events. The team vet should further get the horses fit to compete and prevent or treat injuries during regular visits to the stables or through consultations at the practice. The team vet should know the horses thoroughly and be aware of their veterinary record (case logs) and health status.
- Supporting and supervising horses during transport.
- Having encyclopaedic knowledge of veterinary medicinal products and the FEI regulations with respect to the use of them.
- Communicating on a regular basis with the private equine veterinarian, horse owner, rider, team coach and trainer in full confidentiality.
- Having a positive attitude towards the discipline and having a thorough knowledge and understanding of the sport, the competitors, and the FEI and national regulations.
- Involvement in and knowledge of nutrition of the equine athlete.
- Involvement in and knowledge of animal welfare issues.
- Being present and/or available during the team training.
- Declaring horses fit, or not fit to compete.
- Being a "state of the art" equine practitioner

The profile outlined above is in line with the answers that were given to the question: what distinguishes an equine sport medicine veterinarian from another veterinarian?

The most common answers to this question (in order of frequency) were:

- In equine sports medicine emphasis should be on prevention; *i.e.* keeping the equine athlete healthy and happy. This requires knowledge about

balanced training programmes, testing procedures for physical and mental condition, but above all good clinical skills for the timely detection of any impending health problem.

- The equine vet should therefore “speak the language of the sport”, which requires regular presence and availability at equine competitions and events.
- If horses do get injured or sick, the emphasis is on a quick return through a good rehabilitation programme. The timing of the return may be directed by, or is at least driven by the importance of certain scheduled events. As the treatment of injuries normally implies the use of veterinary medicinal products, the equine sports vet should have a thorough knowledge of the FEI veterinary regulations concerning the use of these substances. He or she should be knowledgeable about possible prohibited substances in forage, feed supplements, ointments, vegetation, etc.
- In the process of training or rehabilitation of an equine athlete supportive therapies such as physiotherapy and manual therapy are frequently used and the equine sport vet should be acquainted with these.

The team veterinarians

Some of the team veterinarians lived up to the expectations of the riders in the sense that they are involved in training, recuperation after injuries, competition schedules, transport, preparation of travel documents, riding- and driving tack, nutrition, treatment of injuries, vaccinations, shoeing, adjustment to extreme climate conditions, animal welfare issues, use of veterinary medicinal products, purchase of new horses, and even the choice of private vets. However, this did not apply to all of them.

The relationship between the team vet and the private vet of the riders was ambiguous at best. In some cases the team vet is the private vet, a situation which may bring its own problems, but in most cases contact is limited. Team vets complain that the rider’s own vets don’t do their diagnostic work-ups, or do it incompletely and that they are insufficiently informed about a horse’s health status and the treatment applied. In fact, there is often an aura of secrecy around the treatment of top level horses, especially when more (para) veterinary disciplines are involved, and many team vets feel misinformed. Moreover, other vets or therapists involved in treating top sport horses generally do not seek contact with the team vet or even avoid it. Contacts with riders is more frequent, especially at and before important events, but team vets only infrequently visit the horses involved at their own premises and do not check them on a regular basis. Financial constraints are given as the main reason for this omission.

The team coaches

Fifty percent of the team coaches had moderate to good professional relationships with the private vets of their team members, but they certainly do not routinely

contact them. Only occasionally are the treatments of injuries, and the related rehabilitation programmes and medication discussed.

There was more frequent contact with the team vets, depending on the competition season for the discipline involved. Issues discussed most between the team vet and the team coach are injuries and rehabilitation, use of medicinal products, transportation, vaccinations, climatic conditions and shoeing.

Team coaches complained about the large differences in knowledge and skills and in involvement in the sport between equine veterinarians, but also between supportive therapists. Some stated that their ideas about potential problems of a given horse are not always taken seriously by the vets. They further encountered a lack of knowledge on preventive veterinary medicine, including training programmes and on therapies (and medication) with a short recuperation period and withdrawal time.

Suggestions to improve equine top sport health care

All three groups of interviewees were unanimous in their answers to the question how the equine veterinary profession could contribute more to the professional development of equine sports in the Netherlands:

- There is a need for better education of both team coaches and sportsmen on items related to performance and health of the equine athlete. This includes knowledge of musculoskeletal physiology and pathology, proper training and “warming up” procedures and injury risk related to discipline. Other important subjects are nutrition, shoeing, transport, behaviour and stress and practical issues related to medication.
- Research is needed on the influence of the surface on musculoskeletal tissues.
- Injury prevention in relation to various equestrian disciplines is an important item.
- The need for much better communication between all stakeholders in the equine industry, including but not limited to riders, drivers, vaulters, trainers, coaches, veterinarians, researchers and supportive therapists is widely acknowledged.
- Funds should be made available for a more professional veterinary support of the Dutch equestrian teams by team vets, private vets, supportive therapists and the department of equine sciences of the Faculty of Veterinary Medicine.

Discussion

The response in this survey of the team vets and coaches was excellent, but the riders and drivers responded in substantially smaller numbers. The relatively low response by the users of veterinary care can possibly be explained by the confidentiality of the information that was asked and the strong competitiveness

between riders and drivers even within the same team. Nevertheless, the degree of response (36.1%) is substantial, and allows the evaluation of veterinary care for the top segment of equestrian activities in the Netherlands in terms of structure, process and outcome. In this system of care quality assessment structure refers to the availability of human and physical resources and the way these are organised, the process of care relates to the actual delivery and comprehends clinical and interpersonal care with communication as a key feature, and the outcome of care is the consequence of care and can be seen as a measure of effectiveness of both the structure and the process of care (Campbell *et al.* 2000).

It can be questioned to what extent the outcome of the present study can be considered representative for the entire population of horse owners in the Netherlands, and therefore of interest to the entire equine veterinary community, or only to those vets involved in care for top sport horses. Although it is clear that some aspects do not apply for the lower levels of the market, for instance the communication between team vets and the rider's own vet, most of the items will apply for all riders and drivers actively engaged in competition, regardless of the level. Requirements and regulations for competition horses are not essentially different at a lower level than at the international level. Also, the current top performers will have proceeded through the lower ranks. It is acknowledged, however, that the results of this study may not be representative for the needs of entirely different areas of the horse industry, such as breeding and leisure riding.

Structure of care

The sportsmen in this study rely on their private veterinarian and on an additional group consisting of a variety of supportive therapists and internationally working equine vets, who are seen as specialists in the field. The availability and performance of this therapeutic panel is judged as satisfactory. Therefore, it seems that there is sufficient supply of equine (veterinary) healthcare in the veterinary (and alternative) marketplace to find the most appropriate treatment. In this respect it should be realized that the involvement of a relatively large number of providers of equine care implies both extensive travelling and substantial financial expenses. This does not present problems, as travelling is inherent to top equestrian activity and, given the budgets involved in equine top sport, affordability of equine veterinary care is often not an issue for the treatment of individual top sport horses.

Despite the fact that the structure of veterinary care for the top segment of equine athletes seems adequate in general, improvements can be made. It is clear that sportsmen would prefer more skills and knowledge concerning equine sports medicine to be supplied by their own private vet. This apparent lack of readily available specific knowledge and/or skills in the field of equine sports medicine may explain why some riders prefer the team vet as private vet, or refer to foreign vets who practice internationally. Another sign of the failure of the structure of equine

health care is the limited role of the team vet, who had never met 44% of the team members and who has no, or insufficient contact with the private vet.

Apart from the insufficiencies in the (immediate) availability of adequate veterinary care and the lack of communication between private vet and team vet, there is another aspect of the structure of veterinary care that needs attention. At present the equine athlete depends completely on the (observational) skills of sportsmen, grooms, owners, trainers etc. with respect to the (early) signalling of the need for veterinary care. This situation clearly is not optimal. The interviewees in this survey acknowledged that sportsmen and trainers lag behind in clinical knowledge of equine health needed to recognize potential problems at an early stage of development. They also lack knowledge on recent scientific research regarding (orthopaedic) shoeing, tendon injuries, working surfaces, equine sports physiology, discipline related injuries, etc. Although the information is available, it does not appear to reach the ultimate user.

To improve the structure of equine health care various actions are needed. Early detection of impending disorders can be improved by regular veterinary check-ups of the equine athletes, which are advocated by team members, team vets and trainers alike, but hardly ever carried out because of financial constraints. The level of the technical knowledge of riders and coaches can be improved by the sharing of practical and theoretical knowledge among the professional workers in the field (sport vets, other therapists, and academic researchers) and making this available to the end users.

The process of supplying veterinary care at top sport level

The process of delivery of veterinary care to the top segment of equestrian activities is heavily influenced by the very specific character of these activities where the stakes are high, both in financial and in economical terms, and at the same time there is (increasing) societal pressure for "fair play" and above all for the respect of equine welfare.

For the actual delivery of clinical care this means that there is heavy pressure for rapid results, leading to an emphasis on therapeutic procedures and a relative underuse of diagnostic procedures according to the team veterinarians in this study. This practice is not optimal from a veterinary viewpoint and hampers the development of evidence-based veterinary science. A complicating factor is that, where the actual treatment is often multidisciplinary in character, there is clearly insufficient communication between the therapists involved, precluding the establishment of comprehensive case logs that would be of great benefit for the treatment of future injuries, and would prove invaluable for the team vet to judge the overall fitness of a given horse and to assess the risk for (repeated) injury.

Requirements for interpersonal care are heavily influenced by the specific conditions of equine top sport activities too. Good quality of equine veterinary care involves communication with all parties concerned and requires an equine veterinary

professional with understanding not only of the horse itself, but also of the different disciplines they participate in, including associated diseases and injuries. Possibly the involvement with equine sports among equine veterinarians will increase in the future. At the moment in the Netherlands all equine track veterinary students do have some experience with equitation and 71% compete(d) at various levels. However, only a few compete at the highest level (Lashley 2007, unpublished data). A recent study amongst practicing equine veterinarians (Loomans *et al.* 2008b) showed that equitation is the most popular sport of female equine practitioners (60%) and the second most practiced sport of male equine vets (21%), indicating this involvement currently is present to a limited extent. However, apparently the equine vets are involved to an insufficient degree, as the participants in the present survey asked for more involvement and horsemanship of the equine veterinary profession at large.

Outcome of equine veterinary care at top sport level

The outcome is the end product of the equine veterinary care in top sport and can be evaluated by the objective technical result and the more subjective appreciation of the result by the client. Seemingly, objective criteria suggest that the outcome of veterinary care in equine top sports medicine in the Netherlands is good. The results of most Dutch team members are very good in many disciplines, there are no doping scandals and equine welfare is not questioned in most cases. However, there is little doubt that outcome could be improved substantially if the deficiencies and omissions in structure and process of care could be taken care of. In that case also the subjective evaluation of care as quantified by this survey could considerably improve. The introduction of regular veterinary check-ups of the equine athletes, which are advocated by team members, team vets and trainers alike but hardly ever carried out because of financial constraints, would be a good item to start with.

Conclusion

Can the result of this survey amongst the top segments of the most important equestrian disciplines be extrapolated to the equine veterinary care in general?

In this respect there are two dimensions to top sportsmen. First of all, top sportsmen are at the top of the pyramid of a sports organization, originating from a strong base where they once started. Secondly, these top sportsmen are an example for a new generation of potential top sportsmen. Therefore, their experiences are important for the evaluation of the quality of equine veterinary care at large since they have passed through every stage and set an example for others.

Assessing the quality of equine veterinary care of top sport horses by means of the conceptual framework as constructed by Campbell *et al.* (2000) proved to be a useful exercise.

This survey showed that the *structure* of veterinary care for top performance horses in the Netherlands is generally satisfactory, but there is a missing link with respect to the early detection of (potential) problems, which is due to the lack of divulgation of relevant knowledge from scientific sources to the equestrian community, and the non-existence of regular checks by the team vets because of funding problems. Also, the creation of specialization in equine sports medicine, which would include thorough knowledge of the effects and withdrawal times of the relevant veterinary medicinal products, would help in improving the availability of adequate and comprehensive veterinary care for sport horses.

The *process* of delivery of veterinary care is hampered by the failure in communication between members of the supportive staff including veterinarians with as most poignant example the bad communication between the team vet and the rider's own private vets.

The conclusions of this survey on structure and process have a striking resemblance with the outcome of the first quality of care article related to court cases against equine veterinarians (Loomans *et al.* 2008a). Communication with the client and other relevant parties in the field, compliance with administrative obligations and a proper use of veterinary medicinal products were identified as most important issues for improvement of the equine veterinary profession, not the technical skills. In this survey an extra dimension of communication, being the transfer of (applicable scientific) knowledge to the sportsmen and trainers, has been identified. Clients expect the equine veterinary profession to provide them with this information in addition to the application of technical skills.

It becomes clear from this study that, although the *outcome* of veterinary care cannot be called insufficient given the good to sometimes excellent international results of Dutch riders and drivers, there is room for improvement in many areas, and not only in equine top sport. Perhaps the most important area is communication between the veterinary and para-veterinary members of the team concerning a given horse. A more collaborative approach would, however, imply abandoning the often secretive character of equine medicine in relation to top sport horses. Although this would require a change in attitude of most professional riders and drivers, and also of the majority of equine vets working in this area, the sector should benefit in the long term.

A more open approach is likely to be better appreciated by the public at large, which is necessary for the long-term sustainability of equine top sports and equestrianism in general, and thus indirectly also for the equine veterinary profession itself.

* **SPSS 16.0, SPSS inc. Chicago, Illinois, USA.**

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Chapter **7**

The use of veterinary medicinal products in equine practices in the Netherlands: Balancing between the law and good veterinary practice

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Introduction

This paper is the fourth paper in a series that aims to evaluate the position of the contemporary equine practitioner in The Netherlands. The first three papers dealt with the veterinary skills that are needed in present-day equine practice, practice economy and quality of work (Loomans *et al.* 2007ab, 2008). Subject of this paper is the availability and use of veterinary medicinal products (VMP's) in day-to-day equine practice in The Netherlands.

As defined by the European Commission veterinary medicinal products can be: a) any substance or combination of substances presented as having properties for treating or preventing disease in animals, or b) any substance or combination of substances which may be used in or administered to animals with a view either to restoring, correcting or modifying physiological functions by exerting a pharmacological, immunological or metabolic action, or to making a medical diagnosis (Directive 2004/28/EC).

Within the European Union (EU), the marketing and use of (veterinary) medicinal products is harmonized by Community legislation. In principle, the European veterinarian is only entitled to use VMP's authorized for specific indications and specific animal species. Authorizations are granted at a national level by the national medicine agencies, or at EU level by the European Medicine Agency (EMA). For horses, the same rules apply as for all food-producing animals. Only products, which, in addition to being proven effective and safe for the treated animal, are also safe for the consumers of products originating from these animals, may be authorized. A maximum residue limit (MRL, the highest level of residues acceptable in edible products) has to be established. Substances should be either on Annex I, II or III (Council Regulation 2377/90) and a withdrawal period of at least 28 days should be established by the veterinarian. However, under certain conditions, (Commission Decision 93/623/EEC & Commission Decision 2000/68/EC amending 93/623/EEC) horses in the European Union can be declared as no longer intended for human consumption. From that moment onwards, the animal is considered as non-food-producing and all rules related to consumer safety do not apply anymore. It goes without saying that declaring a horse as "not intended for human consumption" will largely widen the range of products that can be used. The price for the owner is the loss of the value of the animal at slaughter.

For the treatment of horses, veterinarians can thus in the first place make use of all products authorized for horses and for the specific indication. If there is no authorized veterinary medicinal product for a condition available, the veterinarian may, by way of exception and in particular to avoid unacceptable suffering, (in The Netherlands; in case of a veterinary necessity), refer to the so-called cascade (figure 1).

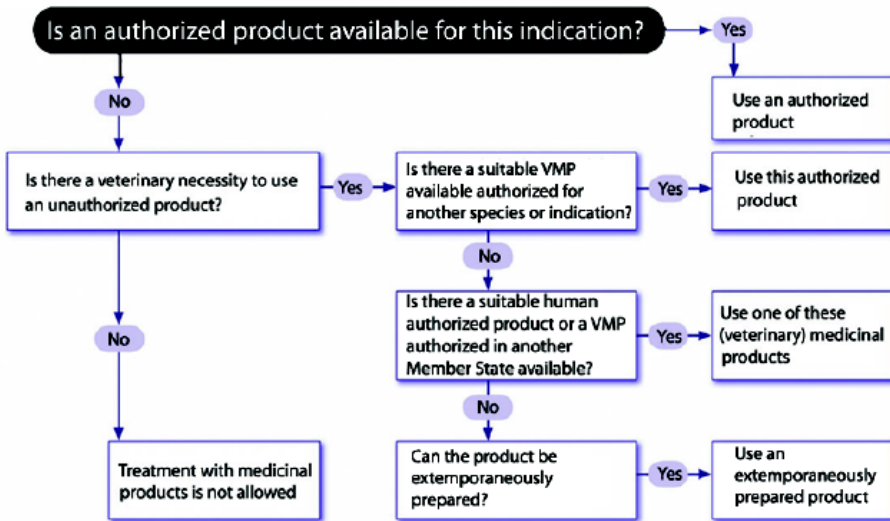


Figure 1.

Cascade as published by the Royal Veterinary Association of the Netherlands. If horses are intended for human consumption the active substances should be either on Annex I, II or III, or on the list of essential substances for the treatment of equidae. If a horse has been designated as “not intended for human consumption”, the same cascade is used, but the restrictions with respect to the active substances do not apply.

Under the cascade, food-producing horses can only be treated with products that are safe for consumers, i.e. products may contain only substances on Annex I, II or III. An exemption is made for the products containing substances put on the so-called “list of substances essential for the treatment of equidae” (Commission regulation EC 1950/2006). In addition to the use of the cascade, and under the same conditions as for the cascade, veterinarians can use products containing substances from this list and maintain the animal's status as a food-producing animal. In these cases the use of the product has to be recorded in the horse’s passport and the withdrawal period shall be not less than six months. Treatment of horses not intended for human consumption follows the same cascade, but the restrictions for the active substances do not apply.

With the publication of the Decree on the use of Veterinary Medicinal Products in October 2005 (Besluit van 18 Oktober 2005) and the ensuing regulations in place in

December 2005 (Diergeneesmiddelenregeling 2005), the Dutch government transposed European legislation into the national legislation. This means that in the Netherlands horses can only be treated with VMP's authorized for use in that species, but that also a legal framework was introduced for the use of non-authorized medicinal products in horses when an authorized product is unavailable and when there is a so-called "veterinary necessity". In these situations the veterinarian is expected to take decisions using all skills, knowledge and evidence available to him, in conformity with; "the legislation in force, the requirements of the customer, the professional code of conduct in force and the ethic principles relating to the services provided and/or the animal under his/her care".

For the pharmaceutical companies the equine market is relatively small and many companies do not invest in the development and registration of products for horses. At this moment, in the Netherlands 218 VMP's are authorized for use in horses. Not counting a large number of vitamins, minerals, vaccines, disinfectants and ointments these comprise only 40 different active substances. There are frequent complaints from the field that this situation is not adequate and veterinarians in the Netherlands too often have to use products authorized for other species including humans. Formerly successfully used equine products have disappeared from the market or are not authorized for use in horses anymore, without replacement by suitable substitutes. This situation frequently urges use of the cascade, and in cases reportedly to the abuse and misuse of this route, *i.e.* to the illegal use of VMP's in equine practice. The fact that in The Netherlands the Veterinary Disciplinary Court declared all four complaints filed against equine veterinary practitioners with respect to the use of non-authorized medication valid indicates that there is a problem indeed (Loomans *et al.* 2008), although it does not give information about the extent of possible incorrect use. This study aims at investigating the present situation with respect to the use and abuse of medicinal products by the equine practitioners and tries to substantiate the sensed discrepancies and friction between the availability of veterinary medicinal products, the legislation in force, the code of Good Veterinary Practice (GVP) and the reality of day-to-day equine practice.

Materials and Methods

Experimental set-up

The enquiry was conducted in December 2006. Practices were sent a questionnaire, approached by telephone and afterwards visited for a personal interview by one of the first two authors (JBAL and LCK).

At the time of the interview, there were 252 private veterinary practices where one or more of the total of 415 "acknowledged equine veterinarians" and 28 nationally and/or internationally registered equine specialists were at work. (The certificate of "acknowledged equine veterinarian" (AEV) was introduced by The Royal Veterinary

Association of the Netherlands in 2001 to guarantee a sufficient level of knowledge and skills to give adequate veterinary care to the equine species).

From this population a total of 35 (14%) of the practices were randomly selected, after blocking for region, single vet or multi vet practice, equine or mixed practice, and registered equine specialist available or not available. These 35 practices employed 88 acknowledged equine veterinarians (21% of the population) and 11 registered specialists (39%).

Used products

For the inventory of the used products a comprehensive list of active substances was made. This list of substances was based on the textbook "Equine Clinical Pharmacology" (Bertone and Horspool 2004) and the formulary of the Equine Clinic of the Department of Equine Sciences Utrecht University (Departement Gezondheidszorg Paard 2007). The list was divided into thirteen therapeutic groups, mainly organized according to organ system, since many disorders are system dependent. An exception was made for systemic glucocorticosteroids, vaccinations and sera, systemically used antibiotics and antiparasitic products, insecticides and repellents (table 1).

Table 1.

Categorization of active substances in VMP's in therapeutic groups according to organ system or systemic use.

Alimentary tract and metabolism	AM
Cardiovascular system	CV
Dermatology	DE
Uro-genital system	UG
Systemic glucocorticosteroids	SG
Vaccinations and Sera	VS
Systemic antibiotics	SA
Nervous System	NS
Systemic Non Steroid Anti Inflammatory Drugs	SN
Antiparasitics, insecticides and repellents	AI
Respiratory system	RS
Sensory organs	SO
Musculo-skeletal system	MS

Active substances can figure in one or more therapeutic groups. For example lidocaine can be used therapeutically or diagnostically in the alimentary tract, cardiovascular system, sensory organs, nervous system and musculoskeletal system.

If an active substance was used in a practice for a certain disorder in a given therapeutic group, the interviewed practitioners were asked to fill in the product that was commonly used as first choice. This enabled the evaluation of the policy of practices with respect to the use of medicinal products. For each specific product the number and percentage of practices using it could be calculated. These products could then be classified according to the actual status of authorization in one of the following categories: an authorized equine VMP in the Netherlands or in another Member State, a VMP authorized for use in another species in the Netherlands or in another Member State, a product with a human authorization, an extemporaneously prepared product, or a product not falling in any of these categories.

Frequency score

Practices were asked to score the frequency of use of a product on a scale from 1 – 3, where 1 is weekly, 2 is monthly and 3 is a few times a year. Average frequency scores per practice and product were calculated.

Origin of the products

Practices were asked to provide the source of the products they used: veterinary wholesale or directly from producer, import firm, own import, human pharmacy, or extemporaneously prepared.

Reasons why non-authorized products were used

In case of use of non-authorized products, the practitioners were asked to indicate the reasons for doing so by ticking one or more of the following answers:

- Product is frequently used in this practice and meets the needs of the practitioner.
- Product is also used for other species in this practice.
- Product price.
- Product is recommended during continuing professional education, by colleagues or in literature.
- Product is packed, wrapped, or formulated in such a way that it is easily administered to a horse

The times a specific reason was given as first or second was counted.

Legitimacy for the use of products in a therapeutic group

For each product the legitimacy for use in a therapeutic group (for both food- and non food producing horses) was evaluated in relation to the Dutch legislation in place, and based on the product characteristics submitted for market authorization.

The products were categorized as follows:

- Authorized for equine use in this therapeutic group.
- Proper use of the cascade.

- The product is on the list of essential substances.
- Improper use of the cascade.

The last category was further subdivided in:

- Non-authorized products with the same active substance, way of administration, package size and formulation as a licensed product.
- Non-authorized products with another active substance used for an indication where a licensed product exists.
- Non-authorized products with the same active substance as an authorized product but with another way of administration, package size or formulation.
- Non-authorized products licensed for this indication in humans, but a veterinary product authorized for another species and another indication should be used first according to the cascade.
- Non-authorized products falling in more than one of these categories.

Results

Used products

A total number of 499 products in the different therapeutic groups could be identified (figure 2). Of these products 24% was authorized for use in horses, 35% was authorized for use in other animal species in the Netherlands, 23% were human products, 9% was authorized for equine veterinary use in member states, 5% was extemporaneously produced, 3% was of unknown origin and 1% authorized for other species in member states. The largest number of authorized VMP's is available for conditions related to the alimentary tract and metabolic disorders. The only therapeutic group completely covered by available authorized products is the one of the vaccines and sera.

Frequency score

Table 2 presents 74 commonly used products encountered in 50% or more of the practices. These are mainly (49) authorized equine VMP's (one from another member state), but also include 20 products authorized for other species (one from another member state) and 5 human products. The frequency score varies from 1.0 to 2.7.

Figure 2

Total number of (veterinary) medicinal products used by equine practitioners in this enquiry and breakdown per therapeutic group. Also the official authorization status of these products is shown per group as a percentage of these numbers in colored bars. NL = the Netherlands, MS = EU Member States.

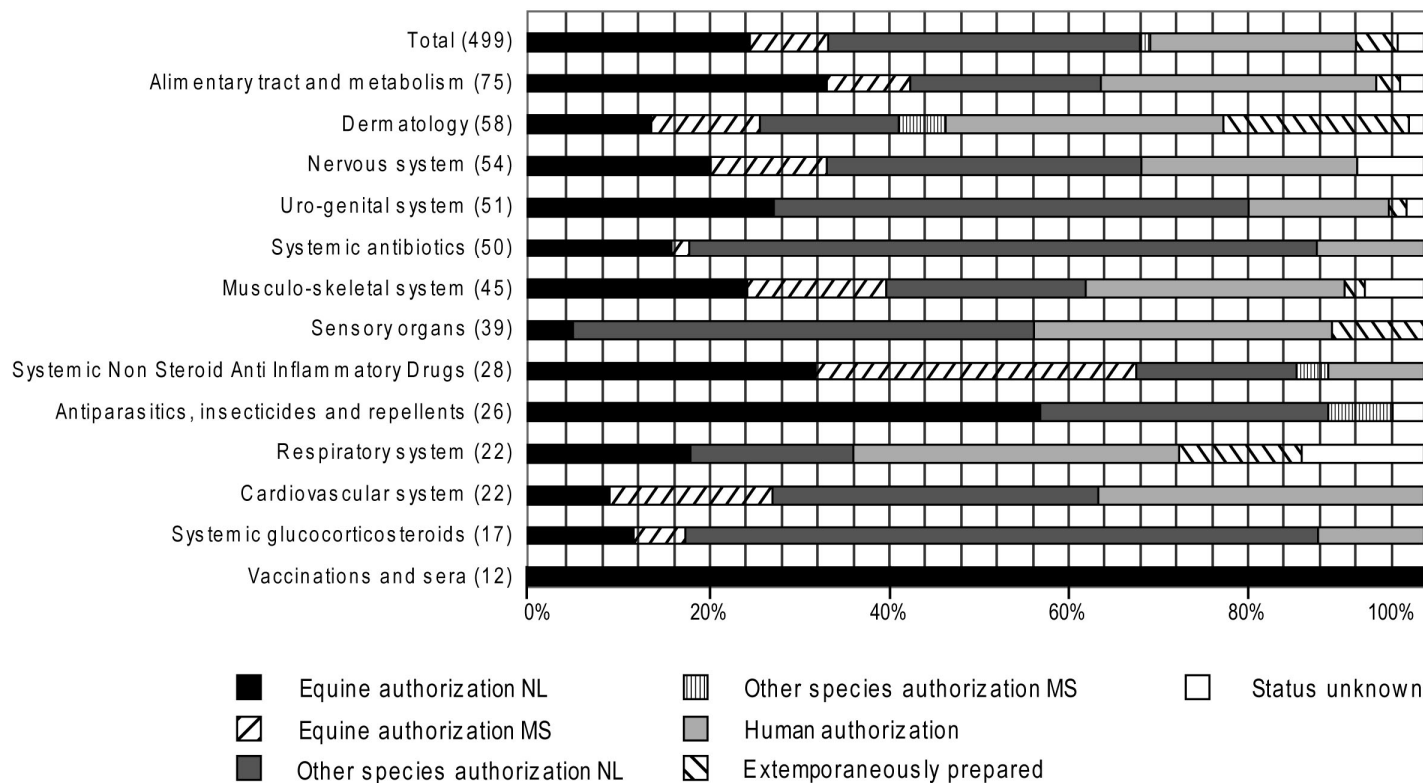


Table 2.

Products used in at least 50% of the practices in this enquiry. Frequency score on a scale from 1 = at least every week, to 3 = a few times a year. Therapeutic group: see Table 1. Authorization: ENL = Equine the Netherlands, EMS = Equine Member State, OSNL = Other species the Netherlands, OSMS = Other species Member State, H = Human, EX = Extemporaneously prepared. Legitimacy for use: White = Authorized for equine use in this therapeutic group, Grey = Proper use cascade, Dark grey = The product is on the list of essential substances, Black = Improper use cascade.

Practices %	Frequency score	Therapeutic group	Substance(s)	Product name	Authorization
100	1,3	RS	Clenbuterol orally	Ventipulmin	ENL
97	1,0	DE	Betadine	Betadine spray, shampoo, scrub	ENL
97	1,2	NS	Detomidine	Domosedan	ENL
97	1,2	AM	Paraffin oil	Paraffine	ENL
97	1,3	DE	Enilconazole	Imaverol	ENL
94	1,4	SN	Meloxicam orally	Metacam	ENL
89	1,2	AM	Butylscopolamine + metamizole sodium	Buscopan compositum i.v.	ENL
89	1,3	UG	Choriongonadotrofine (hCG)	Chorulon	ENL
89	1,4	UG	Oxytocine	Oxytocine	ENL
89	1,4	SG	Dexamethasone	Voreen suspension	ENL
89	1,9	NS	Guaifenesin	Gujatal Eurovet	ENL
86	1,6	SG	Prednisolone orally	Prednisolon caps.150mg	EX
86	2,0	VS	Tetanus serum	Tetanus serum	ENL
86	2,0	RS	Clenbuterol injection	Ventipulmin	ENL
86	2,4	SO	Atropine	Atrodrops	OSNL
83	1,1	NS	Lidocaine 2% + adrenaline injection	Lidocaine 2% +adrenaline	OSNL
83	1,9	AM	Butylscopolamine	Buscopan 20	ENL
83	1,7	SO	Chlooramphenicol eye ointment	CAF	OSNL

Practices	Frequency	Group	Substance(s)	Product name	Authorization
80	1,4	SA	Cefquinome	Cobactan	ENL
80	1,7	VS	Trychophytosis vaccine	Insol dermatophyton	ENL
77	1,2	NS	Acepromazine orally	Tranquigel	OSNL
77	1,6	SA	Ceftiofur	Excenel	OSNL
77	1,7	UG	Altrenogest	Regumate Equine	ENL
77	1,7	NS	Embutramine + Mebenzoniumjodine + Tetracaine	T61	ENL
74	1,5	UG	Sodium chloride (saline) solution	NaCl infuus	ENL
74	1,6	SA	Ampicillin	Ampi-dry 5000 Dopharma	ENL
74	1,7	AI	Foxim	Sebacil	OSMS
74	1,8	NS	Methadone	Methadon HCl 10mg/ml	OSNL
74	2,1	RS	Acetylcysteine	Equimucin	ENL
74	2,5	AM	Calcium gluconate + Magnesium sulfate solution	Calcium magnesium infuus	OSNL
74	2,5	MS	Tiludronic acid	Tildren	ENL
71	1,3	UG	Luprostiol	Prosolvlin	ENL
71	1,3	SA	Trimethoprim + Sulfadiazine orally	Sulfatrim injectoren	ENL
71	1,4	AI	Moxidectin	Equest	ENL
71	1,5	AI	Praziquantel + Ivermectin orally	Equimax	ENL
71	1,7	SO	Oxytetracycline + polymixine	Terramycin zalf	OSNL
71	1,8	RS	Dembrexine	Sputolysine	ENL
69	2,5	AM	Omeprazole	Gastroguard	ENL
66	1,2	SA	Trimethoprim + Sulfadiazine orally	Cubarmix	OSNL
66	1,2	AI	Ivermectin orally	Equimectin	ENL
66	2,0	NS	Acepromazine injection	Vetranquil inj.	OSNL
66	2,0	DE	Allantoine + cod-liver oil + perubalsem	Acederm	ENL
63	1,4	VS	Rhinopneumonia vaccine	Duvaxyn EHV 1-4	ENL
63	1,5	SA	Trimetoprim + Sulfadoxine injection	Borgal	ENL

Practices	Frequency	Group	Substance(s)	Product name	Authorization
63	1,5	NS	Midazolam	Dormicum	H
63	1,8	UG	Ceftiofur	Excenel	OSNL
63	2,5	DE	Camphor ointment	Kamferichtyol zalf	ENL
60	1,3	NS	Lidocaine 2% injection	Lidocaine HCl 2% Eurovet	OSNL
60	1,6	NS	Pentobarbital	Euthasol 40 % opl. Pro inj	ENL
60	1,8	AM	Multivitamin injection	Biodyl	ENL
60	2,0	SN	Vedaprofen orally	Quadrisol	ENL
60	2,3	UG	Betadine solution	Betadine oplossing	ENL
60	2,5	MS	Glucosaminesulfate intra muscular	Adequan	ENL
57	1,2	VS	Influenza + tetanus vaccin	Equilis Ecuenza T	ENL
57	1,4	SG	Dexamethasone	Dexadreson	OSNL
57	1,5	AI	Praziquantel + Moxidectin orally	Pramox	ENL
57	1,7	SA	Gentamycin	Gentaject 10%	OSNL
57	1,8	VS	Strangles vaccine	Equilis Strep E	ENL
57	1,9	AI	Doramectin injection	Dectomax	OSNL
57	1,9	VS	Influenza + Rhinopneumonia vaccine	Resequin Intervet	ENL
57	2,3	VS	Tetanus vaccine	Ecuenza T	ENL
57	2,5	CV	Heparin	Heparine 5000 IE/ml.leo	H
54	1,3	DE	Prednisolone + Neomycin cream	Hydrocortiderm cream	OSNL
54	1,6	NS	Romifidine	Sedivet	ENL
54	2,6	SA	Oxytetracycline	Engemycine	OSNL
54	2,6	SA	Rifampicin	Rifadin capsules 150 mg	H
54	2,7	SA	Enrofloxacin	Baytril	OSNL
51	1,3	AM	Multivitamin injection	Hemo 15	ENL
51	1,4	SN	Phenylbutazone orally	Equipalazone	EMS
51	1,4	UG	Altrenogest	Regumate Pig	OSNL
51	1,8	DE	Aluminium spray	Aluspray	ENL
51	2,0	AM	Clyisma	Practoclys/clyssie	H

Origin of the products used in these practices

Most products are obtained by veterinary wholesale (74%). The rest is supplied by; import firms 12%, human pharmacies 9%, extemporaneously prepared 3%, and imported by the practitioners themselves 1%.

Argumentation for use of specific non-authorized products

By far the most frequent (97%) first reason why a certain product is chosen when no equine authorized product is available is that the product has been used for a long time in the given practice and that the practitioners are satisfied with it.

Second arguments were: the product fits well in the practice's assortment and is also used for other species (69%), the price of the product (12%), and recommendations during CPD, in literature and by colleagues (9%).

Legitimacy for the use of products in a therapeutic group

The equine practitioners in this study relied heavily on the cascade and the list of essential substances for their product choice; in only 23% of the total number of cases an authorized product could be used in both food- and non food producing horses (figure 3). The other 77% of the cases where the practitioner referred to the cascade and the list of essential substances can be divided in 50% where this appeal is correct and 27% where this appeal is incorrect. The improper, or at least questionable, use of the cascade is visualized in figure 4 and for each category some examples are given:

-Non-authorized products with the same active substance, way of administration, package size and formulation as an authorized product

If there is an authorized pharmaceutical with the desired active substance, the cascade cannot be used and it is thus illegal to manufacture a product extemporaneously (e.g. prednisolone + neomycin instead of Hydorcortiderm®), import a product from another member state (e.g. Ulcerguard® instead of Gastroguard®) or use a product authorized for another species (e.g. Regumate pig® instead of Regumate equine®).

-Non-authorized products with another active substance used for an indication where an authorized product exists

There are many examples involving the use of unauthorized products for a given indication when another active substance is authorized. The use of cimetidine, a histamine H2 receptor antagonist in case of stomach ulcerations, is illegal when omeprazole (Gastroguard®), a proton pump inhibitor, is authorized for the same indication. The same applies to the use of phenylbutazone (Equipalazone®, Pro-dynam®), in case of laminitis, where meloxicam (Metacam®) is authorized for the treatment of inflammation and orthopaedic pain.

Figure 3.

Legitimacy for use in food- and non food producing horses, defined in the categories: Equine authorization, Proper use cascade, Essential substances and Improper use cascade, given as a percentage for the total number of products and for each different therapeutic group.

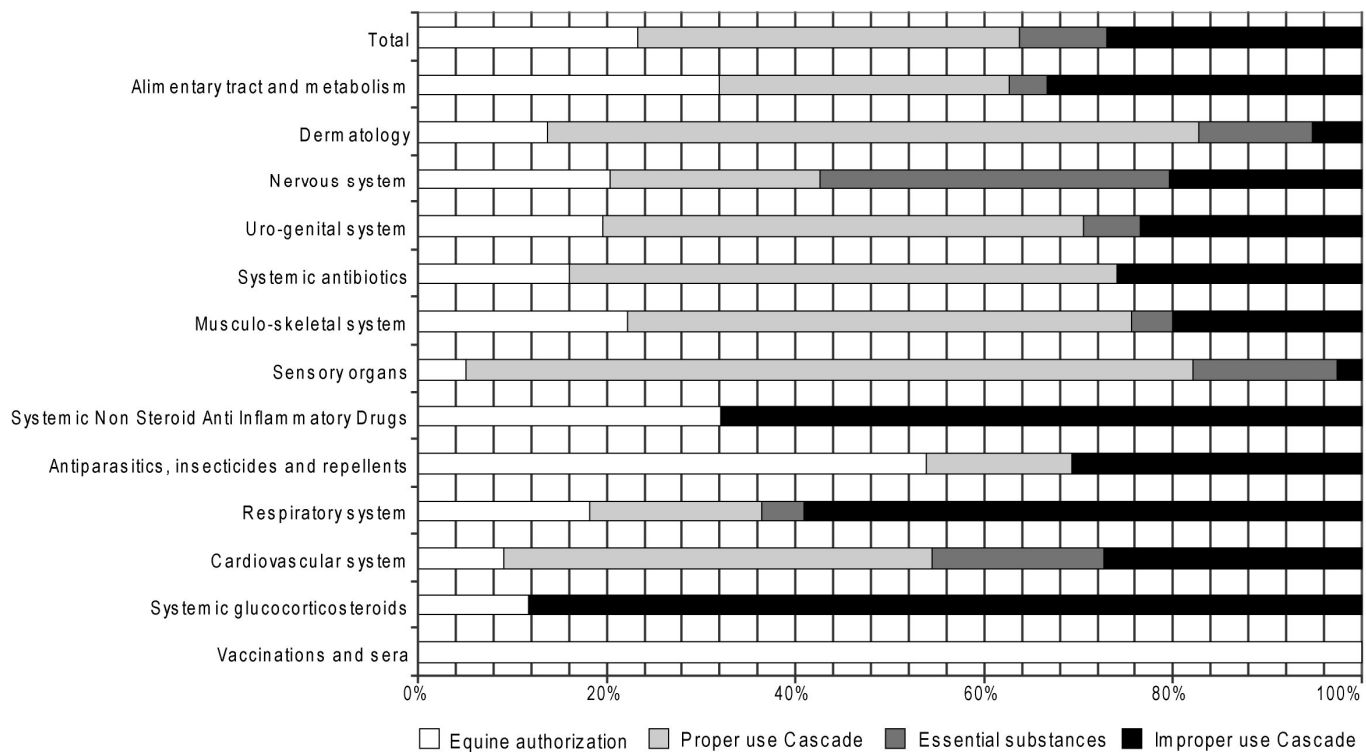
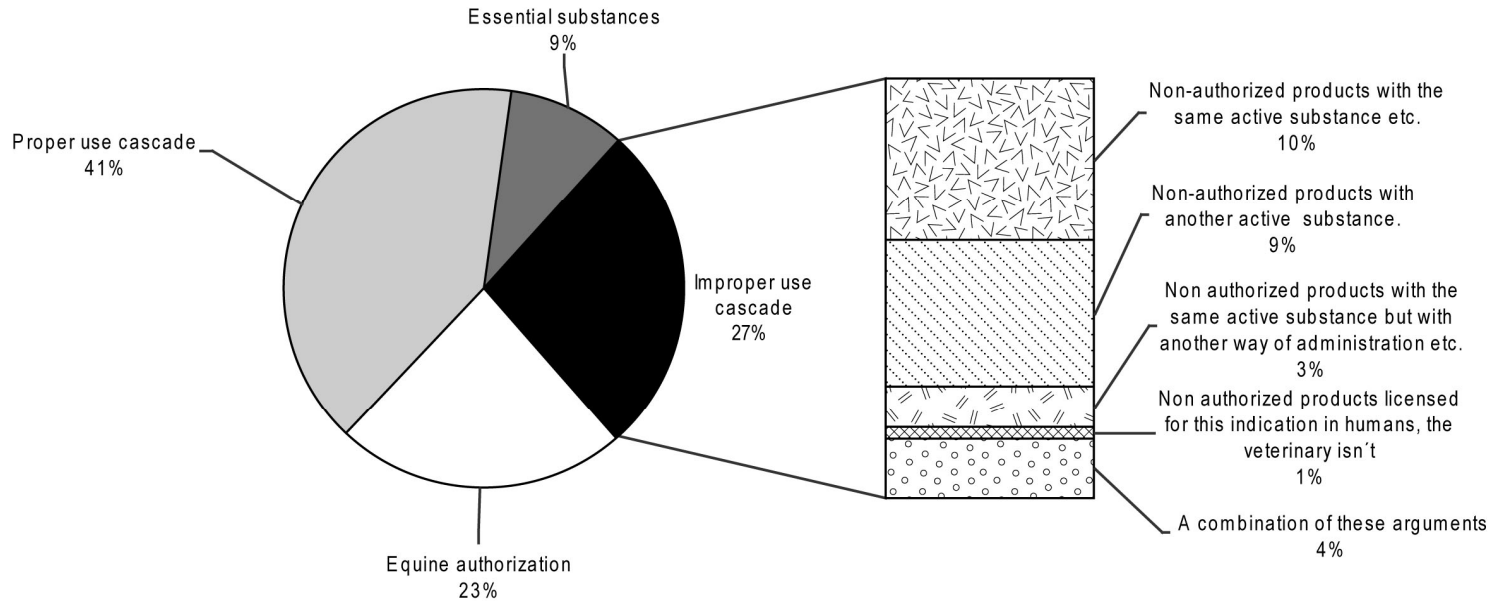


Figure 4.

Improper use of the cascade subdivided in different categories given as a percentage of the total number of products used.



-Non-authorized products with the same active substance as an authorized product but with another way of administration, package size or formulation

Finadyne paste® (flunixin meglumine) for oral application is authorized in other EU member states, but in the Netherlands only the injectable form is available. Carbasalatum calcium (Ascal®) is frequently used in human medicine as an antithrombotic agent and is available in small sachets, which are far more convenient compared to a kilogram jar of pure acetylsalicylic acid authorized for the use in pigs. Orally applicable potentiated sulfonamides are authorized in a paste (Sulfatrim oral paste®), but some horses resent this and can only be treated with potentiated sulfonamides powder (Cubarmix®) mixed with (wet) pellets. Omeprazole paste (Gastroguard®) is authorized, but omeprazole injectable (Losec®) is a human product that is not authorized for use in horses.

-Non-authorized products authorized for this indication in humans, but a veterinary medicinal product authorized for another species and another indication should be used first according to the cascade

Triamcinolone (Kenakort® and Kenalog®) is authorized for intraarticular medication in humans and should not be used, because the veterinary products with triamcinolone (Cortard® and Depocort®), which are authorized for another indication in other species, have to be used first according to the cascade.

-Non-authorized products falling in more than one of these categories

Dexamethasone (Voreen® suspension) is authorized for the indications; skin allergy or respiratory diseases. Daily oral administration of prednisolone can be a good alternative, especially in horses at risk for laminitis, where the therapy can be stopped immediately. Prednisolone tablets (Prednoral®) of 20mg are authorized for the use in dogs and cats, but a horse of 600kg does need 30 of these tablets on a daily base, whereas 4 extemporaneously prepared 150mg capsules are far more convenient.

Discussion

Availability of authorized products

The list of over 200 authorized VMP's in the Netherlands may look impressive, but this study shows clearly that it is far from sufficient. If only authorized products were available, practicing equine veterinary medicine would be seriously hampered if not impossible and the welfare of horses would be at stake. Local anesthesia would be impossible, there would be no proper opioid analgesics, no phenothiazine tranquilizers, no treatment for chorioptes mange, only three different antimicrobial agents, all of them bactericidal, no diuretics, no insulin, no glucocorticosteroid other than dexamethasone etc. etc. In other words, it is impossible in the Netherlands to

provide adequate care according to GVP rules and covering the entire gamma of equine disorders using only products authorized for use in the horse. Therefore, this study also emphasizes the great importance of the cascade and the list of essential substances for day-to-day equine practice, as practitioners are forced to use products, which have not been tested, designed, packed and formulated for equine use.

The cascade and the list of essential substances in practice

In 77% of the cases the veterinarians refer to the cascade and the list of essential substances. One should keep in mind that this always is the second best option. Best option remains a product authorized for use in the horse. Where such a product is not available, the first step of the cascade leads the way to a wide variety of products authorized for the use in farm animals and companion animals. Equine products authorized in other member states figure as the second step, a situation that is unexplainable to every owner or trainer with only a little more than no insight in veterinary matters. Anyhow, equine veterinarians constantly have to inform their clients about the off label use of VMP's. Recently, Bathe stated; *"In an increasingly litigious society, it is necessary to practice the art of defensive veterinary medicine, since good clinical practice alone is not sufficient defence if clients can claim that they were not warned of potential complications"* (Bathe 2007). This is especially true for the use of unauthorized VMP's. The complexity and in some cases the apparent lack of logic of the current legislation make this task not an easy one. Improper, or at least questionable use of the cascade (in this study 27%) can be caused by economic considerations, especially when exactly the same product is authorized for another species or in another member state at a cheaper price. Although such discrepancies can be considered as undesired in what should be a single economic entity, it can be argued that in these cases the equine practitioners are wrong. There are, however, also situations where the legislation is unclear or insufficient and good veterinary practice can only be guaranteed by deviation from the cascade.

An example is the use of glucocorticosteroids and NSAID's for locomotive disorders in the horse. Of the glucocorticosteroids only dexamethasone solution and suspension (Voreen®) are authorized for equine use (indications: allergic skin reactions, respiratory problems and orthopaedic problems). At this moment another, non-authorized, product (dexamethasone-sodiumphosphate solution; Dexadresson®) is used in most practices. This product is authorized for equine use in other member states. Main argument to justify this choice is that the product is believed to be short acting (thus limiting side-effects), whereas the other product (dexamethasone-isonicotinate; Voreen® solution) is known in practice for it's longer duration of action. For intra-articular application of corticosteroids the international literature advocates the use of either bethamethasone or triamcinolone-acetonide (McIlwraith 2002, Caron and Genovese 2003), based on efficacy and reduction of the risk of induction of laminitis, which is a potentially fatal complication of the administration of

glucocorticosteroids in the horse (Dutton 2007, Bailey and Elliott 2007, Bathe 2007). None of these products are authorized for use in horses and equine vets are forced to use the cascade, justified or not, if they want to provide optimal veterinary care in agreement with international standards

With respect to NSAID's, flunixin-meglumine, vedaprofen, meloxicam and sodiummetamizole are the NSAID's authorized for the horse in the Netherlands. Phenylbutazone, however, is worldwide the most popular agent used in horses for the relief of orthopaedic pain with a clinical efficacy that appears to compare favourably with other NSAID's (Stashak 2002, Pollitt 2003). This product is authorized in other EU member states and therefore easily available to the equine community, being legal or not in the Netherlands. NSAID's inhibit the cyclooxygenases COX-1 and COX-2 to different degrees and thus exert different effects with respect to inflammation, fever and pain. Equine veterinarians acknowledge these differences in day-to-day equine practice, supported in their opinion by textbooks, literature and expert opinions. Hence, they sometimes have to consider the use of unauthorized NSAID's for the treatment of their patients.

Another example where GVP conflicts with the official regulations is the use of antibiotics in horses. The Royal Veterinary Association of the Netherlands has issued an antibiotic formulary for the equine veterinarians, made by experts and practitioners as a guideline for the veterinary profession (KNMvD 2003). For each indication a first, second and third choice of antibiotics is given, based on the following considerations:

- Effectiveness, based on bioavailability, pharmacokinetics, in vitro and in vivo effects, toxicity, nature of the disease and clinical experience,
- Prevention of resistance against antibiotics by the use of small spectrum antibiotics and substances known to produce little or no resistance,
- Limited use of fluoroquinolones and third and fourth generation cephalosporines, in order to preserve these products for the use against multi resistant bacteria in human medicine.

There is not a single small spectrum antibiotic authorised for the use in horses and one of the only 3 authorised products is a 3rd generation cephalosporin. With respect to the use of antibiotics in horses the legislation is in conflict with the professional guideline with the possible risk of providing suboptimal treatment, inducing resistance, or even endangering public health.

Conclusion

The harmonization of the European legislation with respect to the use of VMP's in the horse is in principle a good development. The cascade and the list of essential substances are workable in most cases and make practicing equine veterinary medicine in the Netherlands possible. Practicing equine veterinary medicine however,

is more than following cascades and legal obligations. Equine veterinarians are also committed to the health and welfare of the animals under their care and to professional standards like the code for good veterinary practice. They are professionals, (permanently) educated to deal with complex situations considering all possible consequences for the patient, the owner and the environment. In some cases regulations regarding the use of VMP's are in conflict with these commitments and hamper professional veterinary care. An important obstacle is the current incompleteness of harmonization across the EU. Between member states the outcome of procedures for obtaining a marketing authorization of the same product remains different, which creates inequality for equine veterinarians in Europe who have to operate in a rapidly internationalizing market. The pharmaceutical industry rightly sees the development and authorization of new products for a relatively small market with different competent authorities as a bad investment, leading to a stagnating market of equine VMP's. Therefore, the current legislation may suffice for the moment, but also frustrates incentives for future development.

This study shows, in detail, the discrepancies between the available authorized VMP's, the legislation in place, good veterinary practice and the day-to-day work of the equine veterinarian. It illustrates the urgent need for the authorization of more VMP's for different indications for use in the horse, safeguarding the future of a professional equine veterinary healthcare. Given the costs involved and the relatively small equine sector in the different Member States, this problem does not only exist in the Netherlands. Therefore, it should be addressed on a European, or even a worldwide, scale and should be a joint effort of the horse owners and their organizations, the pharmaceutical industry, the international equine veterinary profession and the respective legislators. The Task Force on Availability of Veterinary Medicines (Heads of Medicine Agencies EU 2007) also signaled that veterinarians in the EU rely heavily on the cascade for specific indications and animal species. They concluded: "The availability of an up-to-date database of authorized veterinary medicines, readily accessible across the Community, is seen as pivotal and one which requires priority attention". Nowadays, equine veterinarians are members of an international network of equine healthcare. They are internationally orientated, attending equestrian events, CPD courses and conferences all around the world and read and publish in international equine veterinary journals. In this modern dynamic international world the existence of significant differences in the availability, or the complete absence, of authorized VMP's due to differences in national legislation can only be seen as an unacceptable and unjustifiable anachronism.

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Chapter 8

Occupational disability and job satisfaction in the equine veterinary profession; How sustainable is this “tough job” in a changing world?

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Introduction

Recent sociological studies have identified the equine practitioner as a hard working academic, who is used to long working weeks, including many after hour duties (Meers *et al.* 2008, Loomans *et al.* 2007a). Despite this high workload, the equine practitioner's income remains relatively low and there are large differences in financial profitability between different practices; however, the provision of well-equipped premises is no guarantee for increased revenue (Loomans *et al.* 2007b). The combination of these factors makes the equine practitioner susceptible to work-related stress, which might lead to occupational disability. There is, however, an important physical aspect too. Working with horses appears to be a risky affair. Equitation is amongst the most dangerous sports with respect to injuries (77,000/year in the Netherlands alone). These injuries are not only due to riding, but also related to the handling and caretaking of the horses. Almost 50% of these injuries have to be treated by a physician. Of the sports-related emergency cases in the Netherlands, equitation comes third after soccer and skating (9,000 / year) (Anon 2003). In veterinary practice, problems related to accidents account for 15% of occupational disability, which is in fourth place after musculoskeletal disorders (55%), mental problems (23%), and neurological ailments (16%). Seventy-one percent of the accidents in the entire veterinary profession are related to working with horses (Stembert *et al.* 2003).

It is the question to what extent the somewhat gloomy perspective of long working hours, a moderate income and a high injury risk still appeals to the present-day population of veterinary students that is seeing rapid change in composition and attitude. Extreme long working weeks are not easily accepted anymore by veterinary graduates (Heath 2002), especially if income lags behind that compared to other academic professions (Brown and Silverman 1999, Bristol 2002, Cron *et al.* 2000). There is also a gender issue. In the Netherlands, as in most other countries, the percentage of female veterinary students has increased sharply (currently 76%), and the percentage of female students in the equine track has increased even more (to 80%) in the last ten years. In the USA this gender change was signalled in the report on "The current and future market for veterinarians and veterinary medical services in the United States" (Brown and Silverman 1999). This report stated that female veterinarians work fewer hours and are less likely to become practice owners than their male counterparts. If this is true, then it has serious future consequences for practice organisation and management in equine veterinary medicine where in 2003 76% of the practitioners were still male. Furthermore, the combination of pregnancy and working with horses urges specific additional requirements for the working environment of the female veterinarian, and has implications for the length and intensity of the working week and after hour duties.

In the Netherlands, veterinary medicine has remained a very popular undergraduate course and the influx of motivated equine track students is still more than

satisfactory. This is in contrast to the current developments in the USA where there is a competition for good candidates for internships and externships between practices, as fewer graduates are interested in equine practice (Jackman 2004). Special avenues for internships and externships have been established by the American Association of Equine Practitioners (AAEP) to stimulate students to "discover a career as an equine veterinarian". Here the image of the profession is at stake and thus the attractiveness of the equine veterinary profession for future associates, staff and potential practice owners; in fact the whole future of the equine veterinary profession is questioned (Clarck 2005). Lifestyle and earnings are critical to the new graduate and the profession has to be aware of this and will have to seek ways of making the conditions in equine veterinary practice converge with the changing composition and demands of new cohorts of young vets. The first step in this process is a quantitative assessment of the current state of affairs in equine veterinary practice with respect to physical and psychological health and job satisfaction of equine veterinary practitioners. The aim of this study was to produce data on the physical and mental challenges, occupational disability and job satisfaction of equine vets, with some focus on gender issues. It was hypothesised that the equine veterinary profession is physically and mentally very demanding, which results in work-related stress, accidents, diseases and injuries. This, together with insufficient remuneration will lead to a relatively low degree of job satisfaction.

Materials and Methods

The equine veterinary profession in the Netherlands

This study is part of an ongoing investigation that started in 2002 among 34 equine practices in the Netherlands (Loomans et al. 2007ab, 2008). These practices were randomly selected after blocking for region, single vet or multi-vet practice, equine or mixed practice and whether registered equine specialists were employed or not. The composition of this group of practices has changed over the years, as has the population of equine practitioners in the Netherlands. In a period of 5 years the number of practices where acknowledged equine practitioners work has grown from 218 in 2002 to 248 in 2007 and the number of acknowledged equine practitioners increased from 331 to 414. Also, the number of registered specialists working in equine practices has doubled over these years from 14 to 28.

In this particular study on job satisfaction and physical well-being (started in December 2007) data from 36 practices were used (14% of the practices where equine practitioners work). One-hundred-and-eight Equine practitioners (26% of total), and 12 registered specialists (43% of total) worked in these practices.

Experimental setup

A comprehensive questionnaire was generated covering the personal and professional situation, practice organization, working time and skills, appreciation of the work and the working environment, work-life balance and personal health. Questionnaires were based on similar studies of burn out, musculoskeletal disorders, job satisfaction and job motivation among dentists, general physicians, specialists and the general working population in the Netherlands (Hildebrandt 2001, Visser *et al.* 1999, Gorter 1999, van Dierendonck 1992).

In December 2007, all equine practitioners in the survey were sent a personal letter asking for their cooperation to complete and return the questionnaire. The study did not include equine practitioners who had stopped working previously due to occupational disability, but involved only practitioners who were active as equine practitioners at the time. Estimated time to complete the questionnaire was 45 minutes. Confidentiality was guaranteed as in earlier research within this survey. In mid-January 2008 non-responders received a second letter, and at the beginning of February a third letter was sent. By the end of February, remaining non-responders were approached by telephone. At the beginning of March 79 % had responded and data were analysed using Excel® software.

The questionnaire

-Personal and professional situation

The first part of the questionnaire consisted of questions concerning age, gender, veterinary education, family situation, specialisation, practice situation, time spent on equine work and working hours.

-Frequency and appreciation of specific professional actions

Practitioners were asked how often they performed 16 specific skills or professional actions. They were also asked how strenuous performing these specific skills was. Averages were calculated for the total survey population and split up by gender. Included in this part of the questionnaire were open questions where practitioners could report the top three of their most strenuous skills, the part of the body that was most affected and how they coped with this in practice.

-Work-life balance

These questions involved time spent on sport and hobbies, and related injuries. Female practitioners, who had been pregnant or were pregnant at the time, were asked a few additional open questions with respect to their work scheme before, during and after the pregnancy. Five-point Likert scale statements with respect to their personal situation had to be scored by female equine veterinarians who had been pregnant, and statements regarding the practice policy for pregnancy had to be scored by all.

-Personal health related parameters

This section started with questions on physical and mental health, body condition, use of drugs, visits to the physician, sick leave etc., followed by questions on specific physical and mental problems, categorised by organ system. The practitioner could score the frequency he or she had suffered from a specific problem. If this score was 3 or 4 (recurrent or continuously present), the disease or illness was considered to be chronic. Practitioners who had suffered from injuries and diseases were asked several questions with respect to cause, consequences, insurance issues and possible preventive measures.

Finally statements with respect to the consequences of occupational disability for professional (and personal) relationships and for the organisation of the practice had to be scored.

-Job motivation and indicators for job satisfaction

Ten important aspects of job motivation were identified, which were scored on a 5-point scale. Averages were calculated per item for the entire population in the survey.

With respect to job satisfaction, five important indicators (physical workload (PL), emotional workload (EL), economic concerns (EC), practice management (PM) and job appreciation (JA)) were defined and investigated through sets of statements (Table 1). Overall scores for the indicators were calculated by adding the scores of the individual statements and dividing by the number of statements used. The consistency of the scores concerning certain factors of job satisfaction was tested using Cronbach's alpha, which is a measurement of the internal consistency of different items within the same concept. If Cronbach's $\alpha < 0.60$ there is a low internal consistency, between 0.60 and 0.80 the internal consistency is reasonable and if $\alpha > 0.80$ there is a good internal consistency. Indicators were calculated for the whole group, but also in subpopulations related to gender, age (under or above average age), and working situation (employer and employee). Finally a comparison was made between practitioners reporting recurrent or continuous complaints and those reporting no, or only occasional complaints.

For correlations between the indicators and between indicators and other items, Pearson's correlation coefficient was calculated. In social sciences this correlation, in case of a positive linear relationship, is considered weak if between 0.10 and 0.29, medium between 0.30 and 0.49 and strong if greater than 0.50. For negative relations similar intervals apply.

Table 1.

Statements used to establish indicators for job satisfaction.

The practitioners were asked to score these statements on a 5-point Likert scale, where 1 = totally disagree, 2 = disagree, 3 = indifferent, 4 = agree, 5 = totally agree.

Economic concerns (EC)

- 1 I'm concerned about the financial situation of our practice.
- 2 I'm concerned about the competitiveness of our practice.
- 3 I'm concerned about unpaid bills.
- 4 I am strongly motivated by income.
- 5 Discussions on practice rates annoy me.
- 6 Competition with other practices is very stressful for me.
- 7 Clients not paying their bills annoy me.
- 8 I am concerned about my own financial situation.
- 9 I am not satisfied with my income.

Cronbach's alpha = 0.80

Practice management (PM)

- 1 My work is well organized.
- 2 There are enough possibilities to consult my colleagues.
- 3 Practice management in this practice is good.
- 4 The management of the practice takes my opinion into account.
- 5 The practice has sufficient staff.
- 6 We regularly have to stand in for colleagues.
- 7 The management of the practice has a truthful and realistic perception of my abilities and skills
- 8 The management of the practice informs me well
- 9 There are no safety problems in this practice.
- 10 Part-time work is negotiable in this practice.
- 11 Workload in this practice is equally divided.
- 12 Teamwork is a key element in this practice.
- 13 This practice provides enough opportunities for continuous professional development.
- 14 This practice provides good childcare.
- 15 Working conditions related to pregnancy are well described in the (employment) contract.
- 16 Working conditions related to pregnancy are well organised in this practice.
- 17 Working conditions related to pregnancy are negotiable in this practice.
- 18 This practice is well aware of the risks associated with pregnancy in equine healthcare.
- 19 This practice supplies the right equipment and working environment.
- 20 This practice supplies good and well-trained supportive staff.
- 21 The handling of occupational disability is well described in the (employment) contract.

- 22 During my period of occupational disability my colleagues were very supportive.
- 23 The consequences of my occupational disability were well covered by the practice.

Cronbach's alpha = 0.90

Job appreciation (JA)

- 1 I like working with the colleagues in this practice.
- 2 This practice has a sociable work climate.
- 3 This is the practice of my dreams.
- 4 I enjoy working in this practice
- 5 This practice provides me with enough opportunities for continuous professional development.
- 6 My colleagues are very supportive.
- 7 I find my job challenging.
- 8 I am not hampered by badly performing colleagues.
- 9 This practice provides good veterinary care.
- 10 I am proud of this practice.
- 11 Finding new colleagues for this practice is easy.
- 12 I never think about leaving this practice.
- 13 My colleagues appreciate my work.
- 14 My clients appreciate my work.
- 15 I have a varied job.
- 16 My colleagues were very supportive during my pregnancy.
- 17 Working conditions during my pregnancy were negotiable.

Cronbach's alpha = 0.86

Physical workload (PL)

- 1 I cannot get permission for leave when I need it.
- 2 After a demanding evening/night shift I don't get enough time to recover.
- 3 I am constantly working under time pressure.
- 4 The difficulty of the work is a burden to me.
- 5 I do a lot of repetitive work.
- 6 My working days are very long and demanding.
- 7 The daily workload is unpredictable.
- 8 Part-time work is not negotiable.
- 9 Unsafe situations associated to working with horses are a burden to me.
- 10 I do not have enough time for my social and family life.
- 11 My work is physically demanding.
- 12 My work is so demanding it often makes me sweat, or gets me out of breath.
- 13 The work pace is high.
- 14 I have to hurry every day to finish my job.

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- 15 I see the speed I have to work at as a problem.
- 16 I should slow down my work pace.
- 17 At the end of the day I feel completely exhausted.
- 18 I think I'm too much involved with my job.
- 19 I often encounter unexpected situations in my work.
- 20 I am not in charge of my own agenda.

Cronbach's alpha = 0.83

Emotional workload (EL)

- 1 Occasionally I consider changing to another profession.
- 2 I find dealing with horse owners very stressful.
- 3 The legislation concerning the use of veterinary medicinal products is a real hassle to me.
- 4 I find dealing with unsatisfied customers very stressful.
- 5 Conflicting situations with respect to animal welfare worry me.
- 6 I cannot cope well with the specialisation between species and within species.
- 7 I feel threatened by clients who don't listen to my advice.
- 8 I feel threatened by clients who also consult other vets.
- 9 I feel threatened by the increasing influence of "alternative medicine".
- 10 I feel threatened by the lack of appreciation of my work by clients
- 11 My sense of responsibility for this practice haunts me.
- 12 I feel threatened by the demands of insurance companies.
- 13 I find unreasonable and demanding owners very stressful.
- 14 Rules concerning requirements for the acquisition and maintenance of professional degrees or recognition annoy me.
- 15 Situations associated with my work badly influence my private life.
- 16 My job is mentally very demanding.
- 17 I feel mentally exhausted because of my work.
- 18 Every morning, when a new working day starts, I feel tired.
- 19 I feel burnt out because of my work.
- 20 I feel frustrated because of my work.

Cronbach's alpha = 0.78

Results

Descriptive statistics of the population

Male equine practitioners outnumbered their female colleagues (table 2), but female equine vets were significantly younger.

Table 2.

Descriptive statistics of the equine veterinary population in this study.

	Total	Male	Female	Sign.
				P < 0.05
Gender (%)		65	35	
Age (years)		44.2	38.2	*
Marital status (%)				
Single	10	4	20	
Partnership	20	17	27	
Married	65	72	53	
Divorced	5	7	0	*
Family situation (%)				
Practitioner has children	69	80	47	*
Practitioner earns main income	82	96	58	*
Practice situation (%)				
Employee	32	20	55	*
Single owner	16	16	16	
Partnership	52	64	29	*
Number of practitioners (%)				
Multi-vet practice	88	91	83	
Single-vet practice	12	9	17	
Time dedicated to species (%)				
Equine	82	86	74	
Companion animals	9	7	13	
Farm animals	9	7	13	
Working time (hour)				
Working hours	43.0	47.2	35.4	*
After hour duties	9.4	9.5	9.2	
Total hours	52.4	56.1	44.5	*

The percentage of parenthood was higher amongst male equine practitioners and almost all of them provided the main part of the family income. Just over fifty percent of the female equine vets were employees, whereas 80% of their male colleagues were single owners or partners in a partnership. Relatively more female vets were owners of a single vet practice, but the vast majority was working within a multi-vet practice. Equine practitioners have a long working week (52.4 hours on average). There was a significant gender difference with respect to normal working hours, but not regarding working hours in the evening and night shifts. In this survey 63 % of the equine practitioners dedicated 100% of their time to horses, with the remaining 37 % also working with companion animals and/or farm animals. Of the total time available for all practitioners, 82 % was dedicated to horses and 62 % was actually spent on treating equine patients.

Frequency and appreciation of specific professional actions

Table 3 gives an impression of the daily work of the equine veterinarian and the most frequently performed professional actions. Not all actions or specific skills were performed by all equine practitioners in this study. For instance: 51% never castrated a horse in the standing position, 37% never performed surgery under general anaesthesia, 31% never conducted ultrasonography of the locomotor system, 16% never performed radiography on a horse, 14% never did nerve blocks or arthrocentesis, and 13% never did dental work. Female equine veterinarians scored significantly lower on the frequency of most actions, but also worked less hours (table 2). Actions reported as most strenuous and demanding:

1. Dental work was considered to be very demanding for the arms, shoulders, back and neck. Practitioners tended to cope with this by the use of mechanical equipment, employment of extra support staff for fixation of the head, sedation of the horse and by dividing this type of work equally among colleagues.
2. Obstetrical work (also partially related to farm animals in this survey) was considered to be demanding for the entire body and more specifically for the back, shoulders and arms. There were few possibilities to alleviate this, but all of the equine practitioners reported that this type of work fortunately occurred only a few times per year.
3. Inspection and treatment of the distal limbs (often the hind limbs were mentioned in particular). This included hoof testing, hoof trimming, application of nerve blocks, arthrocentesis and flexion tests, all of which were seen as very demanding for the back and knees. Position and posture

Table 3.

Frequency and perceived impact of specific professional actions.

Frequency; 1=never, 2=few times/year, 3=few times/month, 4=few times/week, 5=daily	Total	Male	Female	Sign. P < 0.05
Administration, "paper work"	4.48	4.48	4.48	
Rectal examination including ultrasound	4.48	4.63	4.20	
Travelling for ambulatory work	4.44	4.43	4.45	
Vaccinations	4.20	4.30	4.02	
Holding the distal limb	4.02	4.30	3.50	*
Flexion tests	3.85	4.10	3.40	*
Passing nasogastric tube and/or endoscope	3.47	3.68	3.08	*
Radiology	3.33	3.63	2.77	*
Arthrocentesis and/or nerve blocking	3.27	3.60	2.67	*
Prepurchase examinations	3.21	3.41	2.83	*
Dental work	3.17	3.43	2.68	*
Surgical wound treatment	3.05	3.11	2.93	
Obstetrical work	2.64	2.63	2.67	
Ultrasonography locomotor system	2.59	2.89	2.03	*
Surgery under general anaesthesia	2.31	2.57	1.83	*
Castration on the standing horse	1.98	2.30	1.37	*
How strenuous; 1=very light - 5=very heavy	Total	Male	Female	Sign. P < 0.05
Obstetrical work	3.82	3.82	3.83	
Dental work	3.75	3.64	4.00	*
Castration on the standing horse	3.68	3.63	3.90	
Holding the distal limb	3.60	3.62	3.55	
Flexion tests	3.42	3.28	3.70	*
Prepurchase examinations	3.23	3.17	3.36	
Ultrasonography locomotor system	3.22	3.35	2.89	
Radiology	3.05	2.89	3.39	*
Surgery under general anaesthesia	3.00	3.04	2.87	
Surgical wound treatment	2.96	3.01	2.87	
Arthrocentesis and/or nerve blocking	2.94	2.92	2.98	
Rectal examination including ultrasound	2.77	2.68	2.92	
Passing nasogastric tube and/or endoscope	2.48	2.40	2.65	
Travelling for ambulatory work	2.39	2.17	2.80	*
Administration, "paper work"	2.33	2.30	2.39	
Vaccinations	2.02	1.87	2.29	*

were often mentioned as key factors in preventing back or knee injuries. In addition, adequate training of support staff, expertise and experience of the practitioner, practice organisation, and last but not least education of horse and owner, including a firm refusal to handle dangerous animals were all considered to be important factors.

Dental work, flexion tests, radiography, travelling and vaccinations were evaluated as being more demanding or strenuous by female equine practitioners.

Personal health related parameters

In human healthcare, the Body Mass Index is used to quantify the health status with respect to being under- or over-weight. Compared to a reference group of 24,000 of the normal working population in the Netherlands in 2006 (Bossche *et al.* 2008), equine vets scored very well with lower than average numbers in the under-weight and over-weight groups.

Other more general parameters related to the health status included visits to the general practitioner in the past year (45%), current treatment by a general practitioner or specialist (17%), sick leave in the past year (38%) and the use of medicinal products excluding those used for birth control (17%). No significant gender differences were encountered.

Table 4 provides information on diseases and injuries of equine practitioners. Only eight persons (9%) reported no health problems, and there were 132 reported diseases and injuries among 78 equine vets (1.7 / person). Problems related to the musculoskeletal system were by far the most important. Allocation to a single anatomical location was difficult since most veterinarians had combined problems, e.g. neck and back, shoulder and back, etc. More than one answer could be given with respect to the (perceived) cause of the problems. More than half of the problems were associated with working in the practice, especially in case of musculoskeletal problems, but this was also true for skin disorders and mental problems. Handling horses appeared to be dangerous and accidents in equine practice relatively often resulted in lower body, and especially knee, injury (55%). Work-related stress was mentioned as a cause of mental problems, but also as a reason for musculoskeletal, skin and circulatory disorders. Diseases or injuries did not result in occupational disability in most cases, but very often the problems were recurrent or continuously present.

Table 4.

Frequency, causes and consequences of diseases and injuries of equine veterinarians.

Diseases and injuries	Total in numbers	Related to work	Related to handling horses	Caused by an accident	Caused by working in bad posture	Caused by workrelated stress	No occupational disability	Occupational disability < 3 months	Occupational disability > 3 months	Recurrent or continuous presence
Musculoskeletal upper body (neck, back, shoulders, arms, elbows, wrists, hands)	71	57	42	11	45	17	52	15	4	47
Musculoskeletal lower body (hips, knees, ankles, feet)	30	15	13	11	4	2	15	11	4	16
Skin	6	5	1	0	0	1	5	0	1	3
Urogenital system	5	1	1	1	1	0	2	2	1	3
Mental problems	5	4	1	0	0	4	2	1	2	2
Respiratory system	4	2	1	0	0	0	3	1	0	2
Circulation	2	1	0	0	0	1	1	1	0	1
Alimentary system	2	0	0	0	0	0	1	0	0	1
Nervous system and sensory system	2	1	0	1	0	0	1	1	0	2
Diabetes	2	1	0	0	0	0	2	0	0	2
Headache	1	1	0	0	0	1	1	0	0	1
Rest category	2	0	0	0	0	1	1	1	0	0
Total in numbers:	132	88	59	24	50	27	86	33	12	80
Total in percentage:	100%	67%	45%	18%	38%	20%	65%	25%	9%	61%

Table 5 provides information about the cause of the last sick leave of the equine practitioners compared to the Dutch workforce in 2006. It becomes apparent that not many equine practitioners take sick leave, and especially not for respiratory problems. They did, however, score higher when it came to musculoskeletal problems of the lower body.

Table 5.

Causes of sick leave by equine veterinarians, compared to the Dutch workforce.

Diseases and injuries by body system:	Survey Total %	Dutch workforce 2006 %
Musculoskeletal upper body (neck, back, shoulder, arm, wrist, hand)	14	17
Musculoskeletal lower body (hip, leg, knee, ankle, foot)	14	5
Skin	1	1
Urogenital system	2	1
Mental problems	3	4
Respiratory system	1	36
Circulation	0	1
Alimentary system	0	8
Nervous system and sensory system	1	0
Diabetes	0	0
Headache	0	4
Rest category	1	11
No sick leave	62	13
Total	100	100

After recuperation from disease or injury, vets worked fewer hours in 7.6% of the cases; 6% stated that reduction of working hours was impossible, and in 86.4% shorter working time was deemed unnecessary. Some vets (18%) managed to modify their professional activities. Changes in activities or working conditions included:

- Better awareness of body position and posture.
- Refusal to work under dangerous conditions.
- Stopping after-hours duties.
- More frequent use of sedation, of a twitch and/or fixation in stalls.
- Cease performing standing castration, obstetrics, dental work, surgery, pre-purchase examination.
- Do rectal examinations alternately with left and right arm.
- Invest in (lightweight) mechanical tools and lightweight ultrasound machine.
- Better (adjustable) car seat.

- More companion animal work.
- Increasing management tasks.
- Hiring of professional coaching.

Occupational disability of a colleague in a multi-vet practice can have significant consequences for the professional relationships within the practice according to 80% of the practitioners. Surprisingly, occupational disability of one or more of the vets almost never resulted in management, or physical changes in a given practice. Equine practitioners who had gone through a period of occupational disability rarely felt insecure after returning to practice.

Work-life balance

Eighty-seven percent of the interviewees stated that their job had a negative effect on their private life; although 70% encountered positive support from friends and family. The separation of work and private life was stated to be difficult for 30% of the responders, and even more (78%) considered their work as their hobby. Sports most practiced were equestrianism, running, fitness, cycling and skiing. Male vets dedicated 2.4 hours a week to sports activities and preferred running followed by equitation, while their female colleagues dedicated significantly more of their time (4.0 hours a week) to sports, but preferred equestrianism.

Of the 30 female equine practitioners in this survey, 16 had been pregnant at least once. Ten of these were working full-time and 6 part-time. The pregnancy period was dealt with in various ways. Some worked gradually less and selected specific tasks, whilst others worked full-time until 7 months of pregnancy when they went on pregnancy leave. Specific aspects of equine practice such as obstetrics, working with hormones and radiography were generally avoided during pregnancy, as were after-hours duties and working with dangerous horses. Pregnant equine practitioners sedated horses more often and more frequently consulted colleagues or asked them for assistance. Five female practitioners indicated that they could not or found it difficult to discuss pregnancy and related working conditions with their colleagues. Pregnancy was not adequately covered in the employment contract according to five female practitioners. Female vets were very aware of the risks involving the combination of equine work and pregnancy, but 42% of the equine practitioners (when applicable) answered that the practice was either not, or only slightly, aware of these risks. Pregnancy-associated illnesses reported in this study were: abortion due to a kick from a horse (once), pelvic instability and low back pain after delivery (twice) and extra time needed for rehabilitation after delivery (twice). Notwithstanding the problems associated with pregnancy, all responders who gave birth stated they were able to combine pregnancy and raising children in a satisfactory way with work in the practice and had sufficient support (with one exception) from their colleagues. After the pregnancy and birth of the baby, all practitioners returned to the same work and workload as before.

Job motivation and indicators for job satisfaction

Table 6 ranks the most important factors for the equine vet with respect to job motivation. Here, there was no significant gender difference. The most important motivation factor for equine vets was the satisfaction of their clients' needs; working with horse owners was the penultimate motivating factor and income was the least important motivating factor.

Table 6.

Aspects of job motivation in order of importance.

1 = very important, 2 = important, 3 = indifferent, 4 = not important, 5 = not important at all.

	Total
Satisfaction of clients' needs	1.72
Solving (veterinary) problems	1.87
Applying clinical skills	1.93
Curing sick animals	1.94
Working with horses	1.94
Fulfilment of own expectations	2.19
Working in a team	2.29
Working outdoor	2.47
Working with horse owners	2.66
Income	2.71

The indicators for job satisfaction can be found in table 7. In this table the inverse values (5-x) of the indicators economic concern, physical workload and emotional workload are given, in order to be able to compare all of these parameters in the same range, *i.e.* from 1 (a very negative contribution to job satisfaction) to 5 (a very positive contribution to job satisfaction). Highest scoring was job appreciation, indicating that equine practitioners appreciate their job, which was especially true for employers. Practice management was evaluated significantly better by male equine practitioners and by employers. Emotional workload was felt more by equine practitioners with chronic problems, a difference not found in the physical workload group. Older practitioners were more concerned about the economical aspects than their younger colleagues.

Table 7.

Indicators for job satisfaction.

The indicators are given for the total population and for subpopulations (male-female; with, or without chronic complaints; old young; employer-employee). Bold figures indicate a significant difference between the data in the same category ($P < 0.05$). Scores are from 1: very negative contribution to job satisfaction to 5: very positive contribution to job satisfaction. A score of 3 means indifferent. In order to make these values comparable, the inverse of the original value for the indicators of economic concern, physical workload and emotional workload is given ($5-x$).

Indicators Job Satisfaction	Total	Male	Female	Chronic yes	Chronic no	Young	Old	Employer	Employee
Economic concern (EC)	2.38	2.28	2.58	2.29	2.51	2.54	2.15	2.35	2.46
Practice management (PM)	3.50	3.62	3.27	3.44	3.59	3.41	3.59	3.62	3.25
Job appreciation (JA)	3.83	3.89	3.73	3.78	3.91	3.75	3.88	3.97	3.56
Physical workload (PL)	2.31	2.33	2.27	2.22	2.44	2.30	2.31	2.38	2.18
Emotional workload (EL)	2.40	2.42	2.36	2.24	2.63	2.48	2.27	2.43	2.34

There was a strong positive correlation between job appreciation and appreciation of practice management (table 8). There were also strong correlations between emotional and physical workload and economic concern. There were negative correlations between physical workload and both practice management and job appreciation. There were medium correlations between musculoskeletal problems in the lower body and the emotional work load, between the physical work load and mental problems, and between support of friends and family and practice management and job satisfaction. Negative medium correlations were found between emotional workload and practice management and job satisfaction.

Table 8.

Correlation between five indicators for job satisfaction and three other characteristics.

Black: there is a strong correlation between the two indicators. Grey: there is a medium correlation between the two indicators. White: there is a weak correlation between the two indicators.

	EC	PM	JA	PL	EL
Economic concern (EC)					
Practice management (PM)	-0.24				
Job Appreciation (JA)	-0.38	0.79			
Physical work load (PL)	0.40	-0.56	-0.53		
Emotional work load (EL)	0.59	-0.31	-0.45	0.57	
Support of friends and family	-0.21	0.33	0.38	-0.30	-0.11
Musculoskeletal lower body problems	0.25	0.10	-0.20	0.17	0.33
Mental problems	0.29	0.19	-0.24	0.32	0.26

Discussion

This study is part of a long-term project that aims to highlight the status and conditions of the equine veterinary profession in present-day society. The project effectively started in 2002 using a balanced sample from the population of Dutch equine practitioners. Changes in society at large are fast nowadays, especially demographic changes, and this applies equally to the equine veterinary profession. Therefore, the study population in this survey (conducted late 2007) was not exactly identical to the original population, but still can be seen as an accurate representation of the entire population equine vets and practices. Data in this study

reflect the self-evaluation of their working situation by equine practitioners and are therefore subjective. Given the aim of this study, subjectivity of data was a prerequisite, as it was the intention to describe the feelings and experiences of equine practitioners in the field, and their perception of the job and its implications; in addition, the study aimed to generate objective and factual data on workload, health status and demography of the study population. Given the high response rate of almost 80% in this relatively time-consuming questionnaire, the interest of the equine practitioner with this subject is clear.

Workload

Equine veterinarians in the Netherlands have a substantially longer working week than the average Dutch workforce, especially if the after-hours duties are included. The average working week of equine practitioners in this survey was only slightly and insignificantly less (52.4 hours) than in 2002 (53.5 hours). A recent publication on working hours in Flanders (Belgium) reported an average working week of 55.7 hours for the entire veterinary profession (Meers *et al.* 2008). The AVMA-Pfizer business practices study of 2005 showed equine practitioners in the USA work approximately 50 hours per week (Volk *et al.* 2005) and in Finland equine practitioners are amongst the veterinarians with the longest working hours (44.3 hours per week not including on-call shifts) (Reijula *et al.* 2003). Male Australian equine vets work on average 55 hours per week and female equine vets work 49 hours per week (Heath 2003). In the European Union, the general workforce in the Netherlands has the shortest average working week with hours still decreasing from 34 hours in 2002 to 31 hours in 2006 (Parent-Thirion *et al.* 2007). In the present study, male equine veterinarians worked on average 56.1 hours a week, which exceeds the European definition for long working hours (48 hours) and is in line with the European tendency that long working hours are mainly a male phenomenon, especially for self-employed workers. Overtime was substantially more than average too. In the Netherlands, the average is 5.4 hours/week (3.5 hours/week for female employees and 7.0 hours/week for male employees) (Bossche *et al.* 2008, Bakhuizen *et al.* 2007). Gender differences in equine veterinary medicine are smaller than in the total Dutch and European workforce, but still significant. Female equine vets work less hours during the day, but equal their male colleagues with respect to the after hour duties.

Physical risks associated with working on horses

Generally speaking, professionals with an academic education do not have physically demanding jobs. In line with this, the number of professional accidents is lower with a higher educational level (Anon 2008). This is not true for the equine veterinary profession. Much of the work is perceived as physically demanding, strenuous and predisposing for diseases and injuries. Repetitive actions such as rectal examinations, radiography, ultrasonography of the lower limbs and physically strenuous jobs like dental work, (standing) castrations and working on the equine foot take their toll on

the health of the equine practitioner. The unpredictability of working with a heavy living animal adds another dimension. This survey showed that in equine practice 67% of the diseases or injuries were related to work, which is very high compared to the average of 35% for the European workforce in general, but is similar to the figure reported for the European agricultural sector (62%) (Parent-Thirion *et al.* 2007). In the European study, the most important work-related health problems were backache (24.7%), muscular pain (22.8%), fatigue (22.6%), stress (22.3%) and headache (15.5%). In equine practice, musculoskeletal pain was reported in 82% of the work-related diseases and injuries. In a study in Belgium amongst all veterinary practitioners a similar proportion (81%) of the responders suffered from at least one musculoskeletal problem (Meers *et al.* 2008). Only 33% of the equine practitioners did not suffer from recurrent or continuous (musculoskeletal) problems, compared to 64% without chronic complaints in the general Dutch workforce. In this context it should be recognised that the origin of musculoskeletal pain is not always physical. There is common agreement that, especially in the case of lower back pain, there is an important psychological component (Waddell and Maine 1998). The NEA (Netherlands Questionnaire on Working Conditions) 2006 study also showed that in the Dutch workforce only 3.3% of the work-related health problems originated from accidents (Bossche *et al.* 2008). In equine veterinary practice in this study this was over 5 times more. Accidents may have serious consequences. In a recent study in a population of 100 equine practitioners in France, 70% reported to have suffered an accident. Of the 100 practitioners, 20% were temporarily handicapped and 10 suffered from a permanent handicap (Pasquet and Denoix 2005). Also in Finland the risk of an accident was considered the highest in equine practices (71%) (Reijula *et al.* 2003). In Australia veterinarians in large animal practices (including equine) were more likely to have sustained a significant injury (65%) (Fritschi *et al.* 2006).

Gender issues in the equine veterinary profession

The equine veterinary profession has long been an (almost) exclusively male business, but the scene is rapidly changing. Female equine veterinarians in this study were on average six years younger compared to their male colleagues, worked less hours during the daytime but shared proportionally after hours duties. There were no significant differences with respect to diseases and injuries, sick leave and occupational disability, indicating that the women perform as well as their male colleagues. The age difference may explain why female vets in this study were more often employees than employers, and does not necessarily mean that they are less interested in becoming partners in the practices. Age may also account for the differences in family situation. The combination of family life, giving birth and a career as an equine veterinarian is common practice, since over 50% of the interviewed female equine vets had been pregnant at least once, and all of them had returned to the same work and workload as before. However, it should be noted that most specific management and work changes related to pregnancy, such as

avoidance of confrontation with unpredictable horses, and avoidance of potentially life-threatening substances and radiation, were taken care of by the female veterinarians themselves and was not a standard operating procedure of the practice. In fact, less than fifty percent of the (male) practitioners were aware of the risks associated with pregnancy and only a few practices have addressed the item in their contracts.

Job satisfaction

Despite the alarming figures with respect to accidents, (chronic) physical problems and, to a lesser extent, mental problems, this study showed that equine practitioners hardly ever take sick leave, and if they have to stop working, they usually return to work within 3 months. This attitude is a reflection of the high motivation for the job. This motivation is not based on income, since this aspect was least important for both male and female vets. The relative unimportance of income is in line with other highly educated people in the Netherlands where the following order of motivating factors has been established: 1) interesting, challenging work, independence, fits to skills and knowledge, 2) social aspects (work environment, organisation, conditions), 3) rewarding, income, job security and 4) opportunities for personal development (Bakhuizen *et al.* 2007). As in the Brown and Silverman report (1999) income was listed low on the list of reasons for opting for a veterinary career. The (equine) veterinary profession is very much service-minded, as client satisfaction ranks first on the list of motivations, despite the fact that working with horse owners ranks substantially lower. There are, however, concerns too. Economic concerns were common amongst the older (above average age) vets, which relates positively to emotional workload and physical workload, but negatively to job appreciation. Physical workload and emotional workload scored at approximately the same level. The physical workload was experienced at an equal level by the different subpopulations, possibly indicating that this is accepted as an inherent aspect of the job. Increasing physical workload does, however, have a negative relationship with job appreciation and a positive relationship with mental problems; thus there are limits to the acceptability of a high physical workload, even amongst equine vets. Emotional workload is closely related to physical workload and is significantly higher for vets who suffer from chronic physical or mental problems. Economic concerns, physical workload and emotional workload were considered negative indicators for job satisfaction as were work related accidents, diseases and injuries. The equine veterinarian emerges from this study as a hard-working academically educated professional, who faces considerable emotional, physical and economical difficulties, but still appreciates his/her job and practice (organization) to a great extent. This is in line with the recent data on the veterinary profession in Flanders, which signals long working days and many occupational health risks and stress. Still 98% was satisfied with their working conditions and 78% would choose a veterinary career again (Meers *et al.* 2008). There was no cynical attitude in the present study towards

the veterinary profession, but there was awareness of the risks and physical consequences, which were more or less taken for granted. The involvement with the job may be an important factor, since most experience their work as their hobby and many participate actively in equestrian events.

Optimising conditions for a healthy future of the equine veterinary profession

In 2005 Clarck stated at the AAEP practice management seminar the following: "Economically successful equine practices will relentlessly pursue three goals: 1) attract and retain customers; 2) attract and retain associates and staff; 3) attract and retain practice owners. Your image is critical to attracting good people. You need to have a powerful and positive image in the local and global community". If the profession wants to move forward and remain attractive, the negative aspects of the working conditions outlined above will have to be dealt with in a professional manner. Until now there has been no shortage of associates, staff and practice owners in the Netherlands, but the figures presented in this study suggest that the profession is at risk. The situation in the USA has already worsened, leading to the advice that; "It is time for equine practice to become proactive in developing a rewarding environment professionally and economically. Many practices will need to take a hard look internally and embrace change to become an attractive atmosphere for the new associate" (Jackman 2004). This statement may apply to the equine veterinary sector at large in a future that is nearer than many may think, as demographic changes occur rapidly. Compared to 2002, the percentage of female equine veterinarians in this survey increased from 24% to 35% in 2007. This is almost a 50% increase in only 5 years, and it forebodes an important change of the dominant gender in the profession. It can be anticipated that in the Netherlands females will be the dominant gender in equine veterinary practice as soon as 2012 (53%), and a complete reversal of the situation compared to 2002 is expected for 2017 (76%). This may have serious consequences for the required number of equine veterinarians, as female equine vets work on average 21% fewer hours compared to their male colleagues, which does not include the time for pregnancy leave. If the equine veterinary workload were to remain the same (an assumption that ignores the current trend of increasing numbers of horses), substantially more veterinarians will have to enter the market, or the others will have to work even more hours. Attracting these extra numbers of equine vets will only be possible if the profession outgrows the "hobby stage" and handles the important health-related aspects of the working conditions in a professional manner, including aspects related to pregnancy and childcare. Organising practices properly, while respecting the unique role of the female gender including financial compensation for pregnancy leave, for instance through a proper insurance policy, is the responsibility of the equine veterinary profession at large and not only of the female contingent.

Concerning work-related risks, choices are already being made by individual practitioners, such as stopping performing standing castration or refraining from

doing dental work without sedation or fixation and/or professional assistance. It is becoming more acceptable to refuse to work under potentially dangerous conditions, and uncooperative patients are increasingly being referred to equine clinics where working conditions are better thanks to the availability of stalls and qualified staff. However, there are counteracting forces such as demanding customers, affordability of safe working conditions, competition with other practices, tradition and the perception that heroism should be inherent to the profession, that predispose the equine practitioner to take irresponsible risks. The standing castration is a good example. Already in 2000 it was concluded, while acknowledging the financial consequences for the owner, by the Dutch association of equine practitioners that, if the risk of complications had to be minimised, the best way to castrate a horse was under clinical conditions with the animal in lateral or dorsal recumbence (van der Velden 2000). Despite this, in 2002 the standing castration was the most frequently performed castration technique in equine practice (Loomans 2003 unpublished data). In the present survey almost 50% of the vets still performed this procedure, even if they scored it as one of the most strenuous and risky activities in their job. It is clear that economic pressure from clients, the competition between practices and with lay castrators hamper the creation of optimal working conditions, thus compromising the welfare of both the equine practitioner and the horse.

There is no doubt that sometimes taking a (calculated) risk is unavoidable, such as in obstetrical and emergency situations. However, much work can be done to make equine vets aware of the risks they expose themselves to by working in bad postures and by other unfavourable, but modifiable, working conditions. Important aspects of the education of how to deal much better with these risks in practice include:

- Training in professional conduct: how to communicate with owners, trainers, colleagues, emergency services, and the public; and how to balance the concerns regarding their interests, the personal interests of the practitioner and the horse's welfare.
- Practice economics: working under safe conditions with enough staff is expensive as is the development and purchase of lightweight equipment.
- Practice organization: availability of (permanently) educated staff and colleagues, workspace, equipment and proper time management.
- Health and occupational disability insurance: what can be expected from it and what do insurance companies expect? This includes appropriate protocols with respect to pregnancy.
- Training in body posture during the performance of (specific) veterinary activities and advice on ergonomic equipment.
- Handling of horses and understanding of equine behaviour, including appropriate and adequate use of chemical and physical restraint.

Many of these issues have been mentioned in the template for a modern veterinary curriculum (Lloyd and Walsh 2002) and in defining the educational goals of the Utrecht veterinary programme (van Beukelen and van der Maazen 2006), but no

attention had been paid thus far to physical and mental fitness, body posture during professional activities, pregnancy and work related diseases and injuries. This omission has been signalled by the Royal Veterinary Association of the Netherlands, who, together with some insurance companies, and driven by alarming figures about occupational disability for the profession as a whole (Stembert *et al.* 2003), have started a continuing education programme preventive measures. Also, a similar course has been made into a standard component of the current veterinary curriculum for 5th year students.

It is the intent of this study to trigger a profession-wide discussion of the measures that have to be taken to ensure the attractiveness, and hence the sustainability of the equine veterinary profession in a rapidly changing environment. The profession still appeals to new generations of young vets, at least in most European countries, but there is no guarantee that this will remain so. Although it is understood that there are (and probably should be) irrational aspects included in the appeal of a specific job, the perception of the profession and reality should not differ too much to avoid disillusionment and consequently short careers. It is the task of the profession itself to anticipate the impending change, for instance by improving conditions for pregnancy and childcare, and to put more effort in educating (future) equine veterinary professionals about their personal health situation and work-associated risks to attract well-prepared professionals and veterinary entrepreneurs, but not "heroes" (i.e. dreamers).

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Chapter 9

Equine veterinary practice in perspective

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Introduction

The veterinary profession has ancient roots and originates from the need of care for military horses, which forms a constant line from the Roman "*Mulomedici*" to the "*Grands Ecuyers*" such as William Cavendysh, duke of Newcastle, and Jacques de Solleysel to the founding of the first veterinary schools at the end of the 18th century (Cavendysh 1674, de Solleysel 1733, Dunlop and Williams 1996). When the first vet school in the Netherlands was founded in 1821 the Ministry of War paid the education of equine veterinary students who, after graduating, had to serve the army for ten years and were well paid (Offringa 1971). It was "the golden age of equine vets". In those days, equine veterinarians were the new elite and many potential students applied. However, the rapid mechanisation that began after World War I and reached completion after World War II made the horse redundant in all its former forms of employment and their importance and numbers declined as a result, reaching an all-time low of 46,000 in 1970 (Offringa 1981). The need for equine vets decreased correspondingly.

However, time was to turn; from 1963 onwards the economy in the Netherlands had started to flourish. Based on the craftsmanship of Dutch farmers a successful and efficient agro industrial complex was built, facilitated by European rules, regulations and subsidies. This boosted the development of veterinary medicine at the veterinary faculty and enhanced growth of private practices throughout the country. Equine veterinary medicine indirectly took advantage of these developments because much of this knowledge could also be applied to horses and, as a result of increased wealth; money was made available to do equine research at government-owned research stations. Therefore, the horse (and equine vet) came back on stage thanks to revival of the horse as a sports and leisure animal from the mid 1960s onwards and equine veterinarians are now (again) prominent part of the veterinary community, justifying the use of the term "second golden age of equine veterinary care" at present. However, circumstances are profoundly different in comparison to the "first golden age of equine vets". Equine vets tend to appeal to the general public as a Herriot-like archetype, but there are also less favourable signals regarding long working hours, frequent litigation, health problems and low income, even to such an extent that in some countries (USA, Australia) it becomes increasingly difficult to attract young equine vets (Lloyd 2006, Clarck 2005, Heath 2004, Jackman 2004, Bristol 2002). Recently, much work has been done on the situation of the present-day vet with respect to working conditions, occupational hazards and job satisfaction. This paper tries to summarise the main findings of these studies to construct a picture of today's equine practitioner and to signal current trends in the profession or in factors influencing it. Based on these observations potential threats and opportunities are identified, leading to some recommendations that may help to steer the profession in the most beneficial way.

The demand for equine veterinary care

Equine veterinarians work in equine practices as well as in mixed practices, in the latter case treating other species to a lesser extent. The most frequently applied skills are those related to the locomotor system and female genital system (more than 50% of total time "hands on"). Together with the digestive system and pre-purchase examinations these activities account for two thirds of the total workload. In general, it can be said that the backbone of equine work is formed by a relatively small amount of activities for which only a limited number of skills is necessary. When asked to estimate the hands on time spent on horses, equine vets estimated this would be 61% of their time available. In reality, not more than 50% of this time available is actually spent applying skills hands on, with additionally 20% travel time. Therefore, 30% of time is spent on additional administration, communication and/or management. There is thus a rather large discrepancy between the perception by the equine vet of his or her activities and reality (Loomans et al 2007a).

During the last five years there has been an increase in more sophisticated diagnostic skills such as broncho-alveolar lavage (BAL), radiography of the locomotor system, ultrasonographic examination of the respiratory system, abdomen and locomotor system, endoscopy, gastroscopy, local and intra-articular anaesthesia, but also of certain interventions like (colic) surgery under general anaesthesia and (advanced) dental work. Although there seem to be hardly any skills that can be claimed as a prerogative for the equine specialist, the number of practices where equine specialists work increases and has doubled in 5 years time (Loomans et al 2008c). This growth of demand for specialised services and new technologies is a world-wide phenomenon that creates a flow of clients from mixed practices to specialised equine centres; the trend has been identified as a potential problem for the profession in Australia and the USA, as low caseloads in mixed practices in areas with a relatively sparse equine population make these practices unattractive for young equine vets (Lloyd 2006, Heath 2004, Bristol 2002). Although the supply of equine care has improved considerably in both quantitative and qualitative terms in recent years, this does not mean that the market demand is completely met in all areas. A survey among top equine sportsmen highlighted ineffective or lacking communication between providers of equine healthcare and insufficient knowledge on the specific treatment of sport horses by the equine veterinarians at large as main shortcomings of the equine veterinary profession (Loomans et al 2008d).

The quality of equine veterinary care

Given the dynamic character of supply and demand of equine veterinary care, quality control and client satisfaction are topics of considerable interest that can be used to monitor performance. The quality of healthcare at large can be assessed by evaluating the structure, process and outcome of care (Campbell et al 2000). An

analysis of court cases filed against equine practitioners showed that frequent failures include the insufficient availability of adequate care in certain defined situations (a structural problem), incompleteness of diagnostic procedures and insufficient information of the client (both procedural deficiencies). Right out technical failures did occur, but featured only in a minority of the incidents (Loomans et al 2008a). When assessing veterinary care for top sport horses, bad communication between the private equine vet and the team vet and the lack of regular veterinary checks of the horses are the main complaints (Loomans et al 2008d). Here again we see incompleteness of diagnostic procedures as a problem. More specific for the area is the complaint that equine vets in general are not knowledgeable enough with respect to the various equestrian activities at top level. These two studies have evaluated equine veterinary care focusing on client satisfaction. Not much information is available to assess the technical outcome of equine veterinary care. Figures on the present health status of the equine population as measures of the outcome of care are not readily available in the Netherlands.

Economics of veterinary practice

Equine veterinary care has become a widely available commodity and horse owners and their horses travel easily to other practices and even to other countries, as does the equine vet to distant clients. State of the art clinics, populated by well-trained equine veterinary professionals, who are eager to keep up to date through continuing education programmes, are readily available in the western world. However, a critical economic analysis of the profitability of the activities of the equine vet shows that better equipped practices are no guarantee for economic success and many economically interesting skills can be performed without the availability of hospital conditions (Loomans et al 2007b). Unlike in human medicine, where income is guaranteed through 3rd parties (insurance companies, state health systems), the equine vet has to be an entrepreneur in his own right. This latter aspect is generally not the reason why he/she has opted for a veterinary career in the first place, as most of them are more clinically than commercially driven. There are, indeed, large differences in practice performance using economic benchmarks (Loomans et al 2007b). The fact that economic skills and an entrepreneurial attitude are weak points of many equine practitioners (Loomans et al 2008c) is aggravated by the current societal trend towards liberalisation of the market, which has led to a ban on fixed rates and hence to more competition on price.

Regulatory affairs

Apart from the ever increasing bureaucratic burden posed by all sorts of regulations regarding working hours, hazard protection, environmental affairs etc., every independent entrepreneur has to cope with; the equine vet is confronted with very

specific regulations that directly affect his or her daily working routine, *i.e.* the legislation on animal medication. Practising equine veterinary medicine in the Netherlands in agreement with the code of good veterinary practice as agreed upon by the veterinary profession and thereby using only authorised equine veterinary medicinal products is impossible (Loomans et al 2008b). In most cases equine vets have to recur to the so-called “cascade” that regulates off-label use or to the list of so-called “essential substances”, that are allowed to treat horses despite being not officially registered, is needed to legitimise the use of medication. In some cases illegitimate use of drugs is the only way out, exposing the equine vet to possible prosecution. Different outcomes of procedures for obtaining a marketing authorisation in different EU member states create in this way a disparity in legal situation between equine veterinarians practising within these EU member states that is inexplicable to owners and cannot be justified.

The human factor

Equine vets are driven by their love for horses and fascination for the equestrian world, as is evidenced by their background that includes some level of equestrian activity in almost 100% of cases and by the frequency they still participate in horse-related activities when in practice (Loomans et al 2008c). Seventy-eight percent of the equine vets experience their work as their hobby, despite the fact that they have long working weeks and admit to find it difficult to balance work and private life. Working with horses poses a serious health risk in terms of accidents (18% of equine vets has experienced injuries related to accidents with horses) and the development of more chronic ailments (61% of equine vets suffer from recurrent or chronic job-provoked ailments). Sixty-seven percent of all diseases and injuries amongst equine practitioners is related to work with musculoskeletal problems as most frequent (Loomans et al 2008c, Meers et al 2008, Pasquet and Denoix 2005). Dental work, obstetrical work and inspection and treatment of the distal limb were identified as the most strenuous and demanding activities. Despite the physically demanding job, equine veterinarians hardly take a sick leave. Apart from the physical workload there is mental stress too, because working with horses is one thing, working with horse owners is another. Whereas satisfaction of the owners’ needs was the most important motivating factor for equine vets, working with horse owners was one but last (Loomans et al 2008c). Emotional workload, physical workload and economic concerns have negatively contributed to job satisfaction, for both male and female equine vets, albeit the impact is relatively small. Driven by a strong motivation, the equine vet appreciates his or her job, is aware of the risks involved and takes them more or less for granted.

Prospects of equine veterinary practice

The prospects of equine veterinary practice are intricately linked to the position of the horse in society. The prospering economy of Western society in the past decades has provided the financial means and time for many people to have a horse for sport or leisure. The current popularity of the horse is unprecedented and is not limited to children but also involves older age groups and all social classes (Anon 2006). In fact, the horse industry has become an important economic entity, the viability of which depends, however, heavily on the unpredictable and at present somewhat shaky prospects of Western economy. Most owners have a strong emotional bond with their horse and will not see it as merchandise, which means that it will not be the first item to be given up in economically hard times, but ultimately it is the availability of sufficient financial resources that decides the animal's fate. There are other societal developments as well that heavily influence the equine sector. The increasing popularity of the horse has led to more regulations by the European Union and national and local governments. The equine sector has not remained unnoticed by the animal welfare lobby either. Here the vet may and should come in. Given the code of good veterinary practice (FVE 2002) equine veterinarians have to play an important role as guardians of animal welfare, a role that may become more important in the future, as it may be formalised in new legislation.

The popularity of horses in society also has its effect on the popularity of the equine veterinary profession. The profession is still very popular, at least in the Netherlands, and the equine track of the veterinary curriculum at Utrecht University attracts yearly many, mainly female, students with a history in equestrianism. The feminisation of the profession proceeds rapidly and it has been estimated that already in 2012 the 50% mark of female equine vets will be passed (Loomans 2008c). Besides the gender change there are also other signs of the emancipation of the equine veterinary profession in line with changes in the society at large. There is less interest for being a (veterinary) entrepreneur and the willingness for long working hours in a full-time job and for participation in after hour duties is decreasing.

However, prospects of a profession do not only depend on changes in society, but also on the way the profession anticipates on these changes. Based on the observations made and trends signalled in the preceding chapters some recommendations for the future development of the equine veterinary practitioners can be given, for the benefit of the horse, owner and the entire equine veterinary profession:

- Make expertise and quality visible at all levels, *i.e.* from the recently qualified equine track student, general practitioner, acknowledged equine practitioner and qualified pre-purchase examination vet to the board-certified specialist, and inform all stakeholders in the equestrian community what can be expected from them, how they obtained their expertise and how this is maintained.

- Consider, depending on market demand, the introduction of new “specialists”, for instance in the field of equine sports medicine.
- Communicate to all relevant stakeholders including owners, insurance companies, equine organisations, local and national governments, etc. how the equine veterinary care system works and what the referral system means.
- Improve the (financial) accessibility of equine healthcare by stimulating and/or developing equine health insurance policies, emphasising the significance for equine welfare.
- Improve skills of equine vets on how to communicate with modern owners, trainers, colleagues, the general public, etc. and train them how to balance the concerns regarding the owners’ interests, their own interest and the horse’s welfare.
- Train vets in practice economics, especially with relation to their time spending and billing for all practice-related activities, including travel, advisory work communication and administration.
- Avoid competing on price, compete on quality instead. This generates more financial stability, but also improves the esteem by the client and thus the status of the entire profession.
- Make a long-term planning for personal and practice development and calculate the underlying economics before investing heavily in equine hospital facilities, acquisition of specialised knowledge and skills, or expensive equipment.
- Separate the entrepreneur from the doctor and think of practices owned and managed by 3rd parties with the vet as a (well-paid) employee, or hire a professional practice manager if being an entrepreneur is not your (or your colleagues’) vocation.
- Improve practice organization and create possibilities for part-time workers, but also improve working conditions for pregnant colleagues and terms for pregnancy leave.
- Take job-related hazards seriously and try to improve working conditions, not only by investing in “hardware” but also in the education of all staff members with regard to body posture during the performance of (specific) veterinary activities, and regarding time management.
- Safeguard the availability and development of equine veterinary medicinal products and exert political pressure to achieve harmonisation of the admission procedures at a European level.
- Invest in skills and knowledge on equine welfare issues to justify the role as the horse’s principal ambassador in this upcoming market
- Cherish the devotion of equine practitioners to the horse and the equine veterinary profession, but on a basis of sustainability, thus protecting their health and their wallet.

Conclusion

The equine vet is back on stage after an absence of a couple of decades. Many of them are doing well, but there are also alarming signals from the profession. As in other professions, from time to time a critical and comprehensive analysis of the position of the equine vet is necessary in order to take timely action to ensure a sustainable development of the profession. A strong drive based on love for the horse and affection for equestrian activities is an excellent starting point, but is not enough. Economic viability, appreciation and social esteem are important factors for maintaining motivation at long-term. There are several ways for the profession to take action in order to achieve these goals, some of which have been discussed in this paper. When the equine veterinary profession is aware of the threats and opportunities of its current status and, based on these, takes adequate and timely action, the exciting technical advances of the modern era may make that the equine vet in his "second golden age" may flourish as never before. However, some caution is in its place as it should not be forgotten that the fate of the equine vet is intricately and inseparably linked to the fate of a single species that is not indispensable for the survival of mankind anymore.

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Samenvatting

Introductie

In de westerse wereld neemt de populariteit van het paard als sport of recreatiedier nog steeds toe. Waar vroeger koeien graasden lopen nu in toenemende mate paarden en menig rundvee en varkensstal wordt verbouwd tot paardenbedrijf. Maneges, trainingsstallen, dekstations en pensionstallen schieten als paddenstoelen uit de grond en rond vele, tot woning verbouwde, boerderijen lopen paarden in alle soorten en maten. De nieuwe paardenhouders komen uit alle lagen van de bevolking en hebben veelal geen agrarische achtergrond. Dit geldt ook voor dierenartsen die zich met de gezondheid van het paard bezig houden. Ook zij zijn gefascineerd door het paard, participeren vaak zelf in de paardensport en hebben paarden als hobby.

Van je hobby je werk maken is de droom van veel mensen, maar dr. Vlimmen bestaat niet meer en de realiteit is vaak anders, weerbarstiger. Idealiter zou een keuze voor een studie en beroep een meer rationele moeten zijn, gebaseerd op reële informatie vanuit de praktijk. Tot op heden bestond er niet veel meer dan anekdotisch materiaal over de werkzaamheden van de paardendierenarts, maar duidelijk was al wel dat niet alles rozengeur en maneschijn was gezien berichten over lange werkdagen, het frequent voorkomen van arbeidsongeschiktheid, de slechte financiële situatie van dierenartsen en hun praktijken, de claimcultuur van paardeneigenaren met als gevolg rechtszaken tegen de dierenarts, het illegaal gebruik van diergeneesmiddelen, etc.

Het doel van dit proefschrift was om op basis van gedegen onderzoek een analyse te maken van het functioneren van paardendierenartsen als onderdeel van de veterinaire beroepsgroep, trends hierin te signaleren en adviezen te geven met als doel om op basis van de feiten tijdig te kunnen anticiperen op ongewenste ontwikkelingen, als individuele dierenarts, als beroepsgroep, maar zeker ook als universitaire onderwijsinstelling.

Centraal in dit proefschrift staat dan ook de paardendierenarts zelf en zijn/haar relatie met het paard, de eigenaar van het paard en "derden" zoals de overheid, verzekeringsmaatschappijen, de universiteit etc. Aan bod komen de historie van de paardendierenarts en zijn/haar plaats in de samenleving, benodigde vaardigheden, vraag en aanbod in de gezondheidszorg van het paard, inkomenspositie, kwaliteit van de geleverde zorg, diergeneesmiddelengebruik, arbeidsongeschiktheid, feminisering van de beroepsgroep en werkplezier.

De ruggengraat van dit proefschrift bestaat uit onderzoek gedaan in 36 Nederlandse praktijken waar paardendierenartsen en specialisten werken (14% van de praktijken met erkende paardendierenartsen) met in totaal 108 erkende paardendierenartsen (26% van de erkende paardendierenartsen), en 12 geregistreerde specialisten (43% van de specialisten). Deze groep van praktijken is een afspiegeling van alle soorten praktijken en dierenartsen die zich in Nederland met de geneeskunde van het paard bezighouden: eenmanspraktijken, groepspraktijken, praktijken die alleen maar paard

doen en gemengde praktijken, praktijken met uitgebreide kliniecfaciliteiten en praktijken die alleen ambulante werken. Zij hebben letterlijk en figuurlijk voor mij de deuren open gezet en waren bereid een toenemende stroom van vragen over hun persoonlijke situatie en praktijksituatie te beantwoorden.

De emancipatie van de paardendierenarts

De ontwikkeling van de "paardenmeester" in de zeventiende en achttiende eeuw naar de huidige paardendierenarts was er een met pieken en dalen. De geneeskunde van het paard en verdere ontwikkeling daarvan werd in eerste instantie vooral ter hand genomen door het leger aangezien de cavalerie volledig afhankelijk was van paarden. Hierbij speelden in eerste instantie vooral de "empiristen" een rol, vaak voortkomend uit de kringen van hoefsmeden enerzijds en de "hogere" rijkunst anderzijds, maar langzaam maar zeker ontstond ook uit de humane wetenschappelijke hoek interesse voor de vergelijkende geneeskunde. In 1807 werd de eerste officiële paardendierenarts in de rang van officier in Nederland aangesteld door koning Lodewijk Napoleon. Na de Franse bezetting en de slag bij Waterloo werd de (paarden) diergeneeskunde een officieel onderdeel van de geneeskundige zorg binnen het leger en werden potentiële paardendierenartsen geëxamineerd door een commissie van de universiteit van Leiden. Pas in 1821 werd de Rijksveeartsenijschool in Utrecht geopend en hier werden de eerste paardendierenartsen op kosten van het leger opgeleid. Zij hadden na hun afstuderen ook gelijk een goede betrekking bij het leger en werden gezien als een elite binnen de totale veterinaire beroepsgroep die het op dat moment moeilijk had omdat een gering aantal dierenartsen op moest boksen tegen een veel grotere aantal, praktisch zeer vaardige, empiristen waarbij zij ook nog werden geconfronteerd met een aantal fulminante besmettelijke veeziekten waar de toenmalige wetenschap geen antwoord op had. Na de capitulatie in 1940 en de mechanisatie van het leger was er geen plaats meer voor een paardendierenarts in het leger en werden de banden tussen het leger en de veterinaire beroepsgroep verbroken. De veranderende rol van het paard in de maatschappij bracht ook een daling van het aantal paarden in Nederland teweeg en daarmee ook (tijdelijk) de belangstelling voor de geneeskunde van het paard. Echter met een toename van de welvaart in Nederland en de enorme naoorlogse groei en ontwikkeling van de agrarische sector kroop het bloed waar het niet gaan kon. Kennis en kunde, maar ook fondsen vanuit de agrarische sector werden gebruikt om aan de toegenomen vraag vanuit de opkomende paardensector te voldoen. In eerste instantie waren het enkele veterinaire pioniers met veel belangstelling voor het paard, maar langzaam maar zeker pakten ook grotere instituten zoals de Faculteit Diergeneeskunde en de Universiteit Wageningen het paard (weer) op en verschenen er steeds meer wetenschappelijke publicaties aangaande ziekten en aandoeningen bij het paard, diagnostiek, maar ook betreffende meer zoötechnische zaken als huisvesting en voeding. Ook dierenartspraktijken in het land gingen zich meer op de diersoort paard

toeleggen, gedreven vanuit een toenemende marktvraag naar specifieke kennis over de gezondheidszorg van het paard. Toch duurde het nog lang voordat deze toenemende marktvraag ook werd (h)erkend door de Faculteit Diergeneeskunde en de Koninklijke Nederlandse Maatschappij voor Diergeneeskunde. De algemene bevoegdheid van de dierenarts in Europa moest gewaarborgd blijven en de ontwikkeling van dierenartsen met meer expertise op paardengebied vond vooral in de praktijk zelf plaats, d.w.z. na het afstuderen. Vanaf 1995 werd het echter mogelijk om binnen de studie diergeneeskunde voor een specifieke diersoort te kiezen, waarbij toch de algemene bevoegdheid gewaarborgd bleef. In 1999 werden ook de universitaire klinieken naar diersoort ingericht in plaats van naar discipline. Door deze verandering van de dierenartsenopleiding, maar ook door het in het leven roepen van erkende paardendierenartsen, keuringsdierenartsen voor paarden en de (inter)nationaal erkende specialisaties op het gebied van de gezondheidszorg van het paard, werd voldaan aan de groeiende marktvraag. Dit overigens volledig in lijn met de ontwikkelingen in andere Europese landen, Noord Amerika en Australië.

Strikt genomen bestaat het beroep van paardendierenarts niet. Het dierenartsdiploma geeft de dierenarts de bevoegdheid om alle diersoorten te behandelen. Echter, ontwikkelingen in de markt hebben wel een "de facto" paardendierenarts in het leven geroepen en het aantal dierenartsen en dierenartsenpraktijken die alleen paarden behandelen neemt toe. De paardendierenarts is onmiskenbaar terug na een periode van afwezigheid en wordt erkend en herkend door de verschillende marktpartijen en de beroepsgroep zelf.

Vraag en aanbod

Om de huidige vraag in de paardengezondheidszorg in beeld te krijgen is onder de hierboven genoemde groep praktijken onderzoek gedaan naar hun dagelijkse werkzaamheden. De dierenartsen werden schriftelijk en later mondeling bevestigd over hun praktijksituatie, privé omstandigheden, inkomen, werktijden, werkdruk, en hun veterinaire vaardigheden en "case load".

Gemiddeld hebben paardendierenartsen een zeer lange werkweek van 53,5 uur exclusief diensten, waarvan zij (zoals uit dit onderzoek bleek onbewust) relatief weinig tijd echt met paarden bezig zijn. Van de beschikbare tijd voor paarden is slechts 50% echt "hands on", 20% reistijd en 30% niet te benoemen. Er zijn echter enorme verschillen tussen personen en praktijken. Paardendierenartsen werken zowel in exclusieve paardenpraktijken als in gemengde praktijken. Zij houden zich vooral bezig met kreupel paarden en het begeleiden van merries (gemiddeld 50% van de beschikbare tijd voor het paard). Samen met koliek en aankoopkeuringen maken deze activiteiten 2/3 uit van de dagelijkse werkzaamheden van de paardendierenarts. De laatste vijf jaar is er een toename geweest in diagnostische handelingen bij het paard (broncho alveolaire lavage, röntgenologie, echografie, laryngoscopie, gastroscopie, arthroscopie); chirurgie onder algehele anesthesie en

gebitsbehandeling. Slechts een klein aantal handelingen wordt niet gedaan in praktijken waar geen specialisten werken. Toch neemt het aantal erkende specialisten in de Nederlandse paardenpraktijken toe.

Met betrekking tot het aantal uren dat de dierenartsen daadwerkelijk met paarden bezig zijn en het aantal verschillende handelingen die zij verrichten zijn er in dit onderzoek grote verschillen geconstateerd. Dit zal leiden tot grote verschillen in competenties tussen de paardendierenartsen en hun praktijken. Het onderzoek laat een belangrijk dilemma voor de moderne paardendierenarts zien, namelijk: met welk deel van de geneeskunde van het paard kan ik mij op welk niveau bezig houden en wie zorgt voor de rest? Dit onderzoek laat zien dat paardendierenartsen, organisaties van paardendierenartsen en de opleidingsinstituten keuzes moeten maken. De geneeskunde van het paard is zo complex en veelomvattend geworden dat een optimale dienstverlening alleen gegarandeerd kan worden vanuit een duidelijk netwerk voor de gezondheidszorg van het paard met een duidelijke positie voor iedere deelnemer en een transparante verwijzingsstructuur.

Inkomen

Om een kwalitatief goede gezondheidszorg voor het paard te kunnen garanderen is een gezonde economische basis van de praktijken een *"conditio sine qua non"*. Opleiden van dierenartsen, dierenartsassistenten en specialisten kost tijd en geld; zowel van de samenleving als de dierenartsen als de individuele praktijken. Dit geldt ook voor de introductie van nieuwe technieken, de aanschaf van apparatuur en de bouw en/of uitbreiding van klinieken. Iedereen gaat hier op zijn/haar eigen wijze mee om. Er zijn praktijken die zwaar kunnen en willen investeren op basis van inkomsten uit andere sectoren, individuen die persoonlijk hun nek uitsteken en vermogende paardeneigenaren die een dierenarts financieel de helpende hand toesteken. Zo is in de loop van enkele tientallen jaren nationaal en internationaal de gezondheidszorg van het paard gegroeid in al zijn diversiteit en kunnen paardeneigenaren kiezen uit een ruim aanbod. Eigenaren reizen tegenwoordig gemakkelijk met hun paarden naar diverse klinieken in binnen en buitenland en paardendierenartsen leggen vele kilometers per jaar af om hun patiënten en cliënten te bezoeken. Praktijken worden steeds afhankelijker van inkomsten uit de paarden en gezelschapsdieren gezien de economische tendens en ontwikkeling in de landbouwhuisdierensector. Gemiddeld komt de meeste omzet uit onderzoek aan het locomotieapparaat, begeleiding van merries in het kader van de reproductie, keuringen, koliekbehandeling en vaccinaties. Om de economische prestaties van de paardensector in deze praktijken ondanks alle diversiteit te kunnen vergelijken zijn er voor dit onderzoek enkele parameters (benchmarks) ontwikkeld zoals: omzet per tijd "hands on", omzet per gedeclareerde uren, omzet per tijd beschikbaar voor paarden, of omzet per patiënt. De prestaties van de praktijken in dit onderzoek met betrekking tot deze parameters zijn zeer divers en volkomen onafhankelijk van investeringen die

praktijken hebben gedaan op het gebied van kennis, faciliteiten, apparatuur en of het een paardenpraktijk betreft of een gemengde praktijk. Dit onderzoek laat zien dat fors investeren in praktijken geen garantie is voor economisch succes. Veel, vanuit economisch perspectief interessante, handelingen aan het paard kunnen ook worden uitgevoerd zonder de beschikbaarheid van kliniecfaciliteiten. De beschreven verschillen tussen de zes beste en zes slechtste praktijken in economisch opzicht kunnen andere praktijken helpen in het nemen van beslissingen aangaande investeringen in tijd, personeel, apparatuur en faciliteiten.

De economische kant van de geneeskunde van het paard is niet direct vergelijkbaar met die van de humane geneeskunde aangezien in die sector het inkomen min of meer gegarandeerd is door verzekeringsgelden of de overheid. Deze situatie stelt extra eisen aan de paardendierenarts die naast dierenarts ook nog een concurrerende ondernemer moet zijn. Dit aspect van het vak was meestal niet de reden om diergeneeskunde te gaan studeren. In dit onderzoek gaf de meerderheid van de dierenartsen aan onderwijs op het gebied van praktijkmanagement en ondernemerschap te hebben gemist in hun opleiding.

Kwaliteit van de zorg

Kwaliteitscontrole en klanttevredenheid zijn actuele onderwerpen in de humane gezondheidszorg maar ook de in veterinaire zorg. Een analyse van de paardendierenarts zou niet compleet zijn zonder een onderzoek naar deze aspecten van de gezondheidszorg van het paard. Hierbij moet in ogenschouw worden genomen dat het in dit onderzoek gaat over het functioneren van de sector als geheel en niet over de individuele dierenarts. Belangrijk hierbij is een goede definitie van kwaliteit. In dit proefschrift is een concept voor kwaliteit van zorg uit de humane gezondheidszorg gebruikt waarbij factoren als de structuur van de zorg (maakt het aanbieden van de zorg mogelijk), het eigenlijke zorgproces (de klinische vaardigheden en de omgang met cliënt en patiënt) en de effecten van deze zorg (gezondheidsstatus van de patiënt en de tevredenheid van de cliënt) de belangrijkste onderdelen zijn. Op deze gebieden dient de veterinaire hulp toegankelijk te zijn, zinvol en effectief. Slechts als aan deze eisen voldaan wordt kan men spreken van kwalitatief goede zorg.

Dit concept is toegepast op tuchtraadzaken tegen paardendierenartsen in Nederland en gebruikt bij de analyse van een recent gehouden enquête onder de top van de Nederlandse paardensport over de veterinaire zorg van de sportpaarden.

Ten aanzien van de tuchtraadzaken viel op dat, zeker vergeleken met gezelschapsdieren, het percentage toegewezen klachten hoger was bij de paardendierenartsen. Het betrof onder andere klachten over het niet tijdig leveren van adequate hulp in spoedgevallen, het sturen van niet gekwalificeerd personeel en het niet tijdig doorsturen (structurele tekortkomingen); maar ook klachten aangaande het onvolledig uitvoeren van diagnostische procedures, inclusief het

onvoldoende informeren van de eigenaar (procedurele tekortkomingen). Klachten over het technisch niet goed uitvoeren van veterinaire handelingen kwamen voor, maar in veel geringere mate. Ten aanzien van de resultaten van de zorg zijn geen gegevens beschikbaar, maar men kan het uitgevoerde onderzoek zien als een onderzoek naar de tevredenheid van de paardenklanten over het resultaat van de zorg.

Bij de begeleiding van de sportpaarden komen ten aanzien van de structuur tekortkomingen naar voren betreffende de kennis van de paardendierenartsen aangaande topsport in het algemeen en de eisen die aan topsportpaarden worden gesteld in het bijzonder, maar ook de gebrekkige communicatie tussen teamdierenarts, privé dierenarts en andere therapeuten. Daarnaast vinden de sporters ook dat een meer structurele begeleiding van de paarden plaats zou moeten vinden en er een betere opleiding voor de ruiters en verzorgers moet komen om tijdig (potentiële) blessures te herkennen en hierop adequaat te reageren. Ten aanzien van het proces van de zorg zijn er opmerkingen over het te snel instellen van een behandeling, het bedrijven van onvoldoende diagnostiek en onvoldoende informatieverstrekking naar de eigenaar, zaken die de ontwikkeling van "Evidence Based Veterinary Medicine" in de weg staan. Ondanks deze punten van kritiek zijn de ruiters over het algemeen wel tevreden over de eigen dierenarts(en). Wel lijkt er behoefte te bestaan aan, en markt te zijn voor, een herkenbare, gespecialiseerde (top)sport paardendierenarts.

Gebruik van geneesmiddelen

Beschikbaarheid van een voldoende groot arsenaal aan geneesmiddelen is voor de paardendierenarts van groot belang. In Nederland is het gebruik van geneesmiddelen bij mens en dier aan strikte wetgeving gebonden. Uit onderzoek in de hierboven genoemde praktijken blijkt dat het vrijwel onmogelijk is om in Nederland paarden te behandelen volgens de code van de goede veterinaire praktijk (GVP code) met alleen voor de betreffende aandoening voor het paard geregistreerde diergeneesmiddelen. Dit kan slechts in 23% van de gevallen. In alle andere gevallen moet de paardendierenarts zijn toevlucht zoeken tot de "cascade" en de "lijst van essentiële substanties" die het gebruik van niet geregistreerde geneesmiddelen bij het paard in Nederland reguleren. Soms is het illegaal gebruik van geneesmiddelen, buiten de registratie, cascade en de lijst om, de enige manier om een paard volgens de meest recente wetenschappelijke inzichten te behandelen, met als mogelijke nasleep vervolging door de klachtenambtenaar. Verschillen tussen de Europese landen in het registratieproces van diergeneesmiddelen veroorzaken een discrepantie tussen de beschikbaarheid van diergeneesmiddelen voor paard in de verschillende landen binnen Europa. Ook het feit dat het paard voor de farmaceutische industrie maar een "kleine diersoort" is maakt dat er niet veel interesse is om nieuwe, maar ook oude diergeneesmiddelen specifiek voor het paard (weer) te registreren. Resultaat van dit

alles is dat de meeste paarden in Nederland legaal of illegaal behandeld worden met geneesmiddelen die niet voor het paard, maar voor de mens en andere diersoorten toepasbaar gemaakt, geregistreerd en verpakt zijn.

Arbeidsongeschiktheid en werkplezier

Het werk van de paardendierenarts is fysiek zwaar, inspannend en predisponerend voor ziektes en blessures. De werktijden zijn significant langer dan van de gemiddelde Nederlandse beroepsbevolking, vooral voor de mannelijke collegae. Vrouwelijke paardendierenartsen werken minder uren dan de mannelijke collegae (21%), maar niet in de diensten. Het grootste deel van de ziektes en blessures zijn werk gerelateerd (67%) en hebben te maken met het spierskeletstelsel (82%). Meer dan de helft van alle paardendierenartsen (61%) heeft regelmatig terugkomende of chronische klachten veroorzaakt door het werk.

Vrouwelijke paardendierenartsen in deze studie die kinderen hadden gekregen (50%) lukte het goed werk en het krijgen van kinderen te combineren, al moest bij de organisatie hiervan wel vaak het initiatief om dit goed en veilig te regelen van henzelf komen.

Er zijn geen significante verschillen gevonden in het aantal en het soort van werkgerelateerde aandoeningen tussen mannelijke en vrouwelijke paardendierenartsen.

Ondanks meerdere toch wel alarmerende bevindingen hebben zowel vrouwelijke als mannelijke paardendierenartsen veel plezier in hun werk en zijn zelden afwezig; als ze afwezig zijn is dit meestal korter dan 3 maanden. De meeste paardendierenartsen beschouwen hun werk als hun hobby en zijn zich zeer wel bewust van de risico's die zij lopen bij de uitoefening van hun vak. Zij nemen deze risico's min of meer voor lief en zien ze als aanvaardbaar en onlosmakelijk verbonden met het vak.

Het toekomstperspectief

De toekomst van de paardendierenarts hangt in eerste instantie samen met de positie van het paard in de Nederlandse samenleving. Momenteel is de belangstelling voor het paard in sport en recreatie ongekend groot en dit wordt mogelijk gemaakt door de goede economische situatie in ons land. Paardeneigenaren zijn tegenwoordig meer emotioneel verbonden met hun paard en de samenleving heeft dierwelzijn hoog in haar vaandel staan. Hierbij speelt de dierenarts een belangrijke rol als "bewaker" van het dierwelzijn zoals vastgelegd in de Code voor de Goede Veterinaire Praktijk.

De populariteit onder de diergeneeskundestudenten om het studiep pad paard te kiezen is nog steeds groot, althans in Nederland. In de VS en Australië wordt het steeds moeilijker om studenten voor de gezondheidszorg van het paard te enthousiasmeren vanwege de lange werktijden, de fysieke uitdagingen en de slechte inkomenspositie. Er zijn ook in Nederland aanwijzingen dat studenten hier moeite

mee hebben. Daarnaast moet er ook rekening worden gehouden met de feminisatie van de beroepsgroep die onmiskenbaar gevolgen zal hebben voor de wijze waarop (paarden) praktijken georganiseerd zullen (moeten) worden in de toekomst.

Doel van dit proefschrift was om op basis van onderzoek harde gegevens over de huidige stand van zaken in de gezondheidszorg van het paard te verzamelen, en aan de hand hiervan aanbevelingen te doen voor de toekomst. Succes van een beroepsgroep hangt niet alleen af van de veranderingen in de samenleving maar vooral ook van de wijze en de professionaliteit waarop de beroepsgroep zelf met de veranderingen omgaat. Vandaar de volgende aanbevelingen om te komen tot een professionele paardengezondheidszorg in Nederland die klaar is voor de toekomst en die ten dienste staat van het paard, de eigenaar, de samenleving maar ook recht doet aan de paardendierenartsen die zich hiervoor inspannen.

- Maak kennis en kwaliteit zichtbaar op alle niveaus, d.w.z. de recent afgestudeerde studierpad paard student, de algemene practicus, de erkende paardendierenarts, de keuringsdierenarts en de gecertificeerde specialist, en maak aan iedereen duidelijk wat er van wie verwacht kan worden, hoe ze aan hun expertise zijn gekomen en hoe ze deze onderhouden.
- Overweeg om op basis van vragen uit de markt nieuwe "specialismen" in het leven te roepen, zoals bv. de sportpaardendierenarts.
- Communiceer aan alle relevante partijen zoals eigenaren, verzekeringsmaatschappijen, organisaties van paardensporters en stamboeken, lokale en nationale overheden etc. hoe het systeem werkt, hoe verschillende onderdelen met elkaar samenwerken en hoe verwijzingen plaats vinden.
- Vergroot de toegankelijkheid van de zorg door eigenaren te stimuleren hun paarden voor ziektekosten te laten verzekeren en denk mee over alternatieve vormen van verzekeringen. Benadruk hierbij ook het belang van de verzekering voor het dierwelzijn.
- Vergroot de communicatieve vaardigheden van de paardendierenartsen vooral ook om in discussies met eigenaren, trainers, collegae en groepen uit de samenleving de belangen van het paard, de eigenaar en de dierenarts met elkaar in evenwicht te houden.
- Train paardendierenartsen in de economie van hun eigen praktijk, vooral op het gebied van "time management" en het in rekening brengen van alle praktijkgerelateerde zaken, inclusief reistijd, advisering, overleg, administratie etc.

- Concurrereer niet op prijs, maar op kwaliteit. Het genereert meer financiële stabiliteit voor de praktijk en minder onrust, maar verbetert ook het beeld dat paardeneigenaren van dierenartsen hebben en dus de status van de gehele beroepsgroep.
- Maak een lange termijn planning voor de ontwikkeling van de praktijk en haar medewerkers met een goede financiële onderbouwing, alvorens te investeren in praktijkfaciliteiten, kennis, vaardigheden of dure apparatuur.
- Splits de ondernemer van de dierenarts en denk aan praktijken aangestuurd door derden met de dierenarts als (goed betaalde) medewerker, of aan een eigen praktijkmanager, als ondernemer zijn niet jouw roeping is of die van je collega.
- Verbeter de praktijkorganisatie, schep mogelijkheden voor parttime werkende dierenartsen of eigenaren, en regel de arbeidsomstandigheden voor zwangere collegae en zwangerschapsverlof.
- Neem slechte arbeidsomstandigheden en gevaarlijke situaties tijdens het werk serieus en verbeter deze. Niet alleen door het aanschaffen van "hardware", maar ook door het opleiden van alle medewerkers op het gebied van werkhouding bij de verschillende handelingen en op het gebied van "time management".
- Bewaak de beschikbaarheid van diergeneesmiddelen voor paarden, stimuleer de ontwikkeling van nieuwe producten en zet politieke druk op het tot stand komen van harmonisatie van de administratieve procedures voor de toelating van diergeneesmiddelen in Europa.
- Investeer in kennis en vaardigheden op het gebied van het welzijn van het paard om de rol van de paardendierenarts als ambassadeur van het paard waar te kunnen maken.
- Koester de liefde voor het paard onder de paardendierenartsen, maar met een gezonde en realistische kijk op het vak, die ook goed is voor de eigen gezondheid en de economie van de praktijk.

Conclusie

De paardendierenarts is terug op het toneel en heeft zijn plaats in de diergeneeskunde weer veroverd. Het is een enthousiaste en gemotiveerde groep dierenartsen die altijd op zoek is naar nieuwe uitdagingen. Dit is een goed begin, maar niet voldoende om de professionele gezondheidszorg van het paard voor de toekomst veilig te stellen. Er zijn mogelijkheden genoeg, maar daarvoor moet de beroepsgroep wel in actie komen. Hopelijk zijn de in dit onderzoek aangedragen gegevens en aanbevelingen een prikkel om verder te bouwen aan een netwerk van professionele gezondheidszorg van het paard in Nederland (en daarbuiten) met een gezonde sociale en economische basis voor alle deelnemers.

Curriculum vitae

Johannes Bernardus Antonius (Joop) Loomans

Date and place of birth: August 10th 1959, Amsterdam, the Netherlands.

Married: September 1st 1989 with H.R.J. (Henny) van Delft.

Children: Janneke (February 17th 1991), Jeltje (July 24th 1992), Koen (June 1st 1994).

Education

High school Open Scholengemeenschap Bijlmer, Amsterdam, the Netherlands 1971-1977.

Propeduse Social Geography Vrije Universiteit Amsterdam, the Netherlands 1977-1978.

First and second year Veterinary Medicine, Gent University, Belgium.

Graduated as veterinarian, Veterinary Faculty, Utrecht University, the Netherlands in 1988.

Acknowledged Equine Practitioner Veterinary Quality Organization 2001.

Working experience

Timorstud, N.S.W., Australia in 1979 working for eight months as a "jackaroo" on a cattle, sheep and horse breeding farm.

Athi River Game Ranch /Kabete Veterinary Research Laboratories Nairobi, Kenya, 1986 research on a project resulting in a review paper: "Studies on wild and domestic herbivores on a game ranch in Kenya".

Equine research farm "De Bovenste Hof", Limburg, the Netherlands, 1987 externship including research on the use of a progesterone milk pregnancy test for mares.

Dierenartsenpraktijk Beltrum in the east of the Netherlands from 1988 - 1990, employee in mixed practice, mainly farm animals.

Dierenartsenpraktijk Lichtenvoorde in the east of the Netherlands from 1990 - 2001, partner and one of the owners of an eight vet mixed practice, general practitioner with emphasis on farm animals and horses.

Department of Equine Sciences, Veterinary Faculty, Utrecht University, the Netherlands since 2001, researcher, teacher and equine practitioner, head of the ambulatory clinic. Member of the department of equine sciences board for educational affairs.

Other functions

Board member Veterinary Quality Organization (VKO) for equine and companion animal affairs, 2001-2004.

Chair equine technical committee VKO, 2001-2004.

Chair equine veterinary medication commission GGP (Society for Equine Veterinary Medicine, Royal Veterinary Association of the Netherlands (KNMvD)), 2002-2006.

Delegate for the Netherlands, Federation of European Equine Veterinary Associations (FEEVA) 2002-2006.

Member of the advisory committee on veterinary medicinal products of the KNMvD, 2006-present.

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Dankwoord

Het was een gewaagde overstap zeven jaar geleden: een goedlopende praktijk met volop mogelijkheden voor de toekomst, met fijne collegae, in een mooi deel van Nederland verruilen voor een ambtenarenbestaan in Utrecht. Er waren slechts weinig mensen die deze wending in mijn carrière begrepen. In de beeldvorming wint de romantiek van de plattelandsdierenarts het nu eenmaal altijd van het saaie academische bestaan van onderzoek en onderwijs. Het is de hoogste tijd om iets aan die beeldvorming te doen.

Dit dankwoord wil ik daarom als eerste gebruiken om mijn bewondering en respect uit te spreken voor al mijn collega's in de universiteitskliniek voor paarden. Hun toewijding voor het vak, en inzet voor de studenten, patiënten, wetenschap en de praktijk is bewonderenswaardig en blijft te vaak onderbelicht. Ook ik heb onderschat hoe zwaar en complex de combinatie van onderwijs, onderzoek en patiëntenzorg is, en heb nog nooit in zo'n dynamische en inspirerende omgeving gewerkt.

Aan mijn vertrek uit de praktijk en de overstap naar de Faculteit Diergeneeskunde zijn verschillende gesprekken met Ab Barneveld vooraf gegaan. In één nachtelijk telefoongesprek schreven wij de contouren van dit proefschrift. Achteraf besef ik eigenlijk pas hoe ongebruikelijk een dergelijk onderwerp voor een veterinair proefschrift is en hoe hij zijn nek voor mij heeft uitgestoken. De sociaaleconomische positie van de paardendierenarts behoort nu eenmaal niet tot een van de aangewezen onderzoekslijnen of speerpunten, en door paardenpractici veel gelezen tijdschriften scoren niet hoog qua "impact factor". Ab, bedankt voor jouw vertrouwen in mij en de stimulerende gesprekken die wij samen hebben gevoerd over de toekomst van ons beroep.

Partir c'est mourir un peu, maar de ambulante kliniek voor paarden deed mijn hart weer opleven, vooral door de motiverende en stimulerende rol van Peter Stolk. Zijn collegialiteit was hartverwarmend. We hebben samen hard gewerkt in de ambulante kliniek waar hij mij heel veel ruimte gaf, we hebben veel plezier gehad en ook veel over mijn onderzoek kunnen praten, waarvoor ik Peter zeer erkentelijk ben.

Hoe maak je van een practicus een wetenschapper? Het antwoord is René van Weeren! Beste René, jouw interesse voor het onderwerp, je stroom aan ideeën, maar vooral ook jouw gave om dit tot de juiste proporties terug te brengen was goud waard. De brainstorm sessies met Henk Vaarkamp, Peter Stolk en Ab Barneveld gaven zoveel energie dat ik nog dagen "nagloeide". Het vakmanschap van Ab en René zorgde er uiteindelijk voor dat ons enthousiasme werd gekanaliseerd en

teruggebracht tot iets werkbaars met als resultaat wetenschappelijke artikelen die gretig aftrek vonden en dan nu dit proefschrift.

Voor het verzamelen van informatie was ik volledig aangewezen op de praktijken met paardendierenartsen in Nederland. Deze *at random* samengestelde groep van praktijken in het onderzoek heeft mij nooit teleurgesteld. Sterker nog, bij de bezoeken die ik aan de praktijken heb gebracht bleek veel belangstelling voor het onderwerp en werd er volop met mij mee gedacht. Het gaf mij het aangename gevoel op het goede spoor te zitten. We delen met elkaar de zorgen over, maar ook het enthousiasme voor, het vak en ik heb veel waardering voor mijn collegae die ondanks hun volle agenda bereid waren tijd en energie in mijn onderzoek te investeren. Ik hoop dan ook van harte dat de resultaten van dit onderzoek voldoende *return on investment* hebben geven.

Ook bij het Veterinair Tuchtcollege kon ik op een goede samenwerking rekenen. Mevr. Hofstede-Bron en haar staf hebben mij enorm geholpen bij het doorspitten van de dossiers en inzicht gegeven in de werkwijze van dit college.

Het was een verademing om voor sommige onderwerpen het onderzoeksteam uit te kunnen breiden. Lieuwke Kranenburg was met haar achtergrond en worstelingen met diergeneesmiddelen voor paarden de perfecte partner voor de zoektocht naar de gebruikte geneesmiddelen in de paardenpraktijk. Zowel in de opzet van het onderzoek als in de uitvoering ervan hebben wij uitstekend samen kunnen "sparren" en dit lastige dilemma voor de paardendierenarts overzichtelijk in beeld gebracht.

Mogelijk nog ingewikkelder, of gevoeliger, was het onderzoek naar de mentale en fysieke gesteldheid van de paardendierenarts. De professionele kennis en kunde van Madelon van Weeren-Bitterling op het gebied van lichaamshouding en ergonomie waren van groot belang voor dit onderzoek. Gezien haar betrokkenheid bij en inzet voor de beroepsgroep gaat zij ook vast een belangrijke rol spelen bij het vinden van praktische oplossingen voor de geïnventariseerde problemen.

Wat begon als een klanttevredenheidsonderzoek in het kader van een afstudeeropdracht voor Patricia Waaijer eindigde in een onderzoek naar de veterinaire begeleiding van topsportpaarden in Nederland. Jac Maree speelde hier een sleutelrol door zijn banden met de KNHS en zijn persoonlijke betrokkenheid bij de topsport. George de Jong schiepte de ruimte bij de KNHS en zorgde voor de medewerking van de topsporters, team coaches en team dierenartsen. De resultaten van dit onderzoek en de bespreking hiervan met alle betrokkenen hebben een goede basis gelegd voor een brede en intensieve samenwerking van alle partijen in de toekomst.

Dit proefschrift zou niet compleet zijn geweest zonder het plaatsen van de huidige paardendierenarts in een historisch perspectief. Er is veel literatuur beschikbaar, maar hoe pak je dit aan en hoe kun je dit uit laten monden in een wetenschappelijk artikel dat in je proefschrift past? Hierbij is Peter Koolmees van grote waarde geweest met zijn ervaring, maar ook met zijn eigen historische perspectief als medewerker bij de Heelkunde in een ver verleden.

Collega Piet den Hartog wil ik bedanken voor de genoeglijke dag die ik bij hem thuis mocht beleven al pratend over zijn rol in de geschiedenis van de Nederlandse paardendierenarts. Postuum wil ik ook Evert Offereins memoreren. Hij heeft een belangrijke rol gespeeld in de ontwikkeling van de geneeskunde van het paard in de Nederlandse paardenpraktijken en ik heb het genoeg gehad om hier uitgebreid met hem over te kunnen spreken. Zijn professionaliteit, nieuwsgierigheid, ondernemingdrang, kennis, kunde, vakmanschap en communicatie met de paardeneigenaren zijn een voorbeeld voor de beroepsgroep.

Het onderzoek, en de bespiegelingen over onze beroepsgroep die ik in dit proefschrift heb vastgelegd komen voort uit mijn liefde voor het vak en mijn oprechte zorg over de toekomst. Gelukkig heb ik partners gevonden die mij in staat stellen deze bespiegelingen te delen met de beroepsgroep door financieel te steunen bij het drukken en verspreiden van dit proefschrift in binnen- en buitenland. Dit zijn: Hippo Zorg Paardenverzekeringen, Nysingh Advocaten-Notarissen, CenE Bankiers, AUV Dierenartsencoöperatie, Virbac Nederland B.V., Boehringer Ingelheim Animal Health, Intervet Schering-Plough Animal Health en het Departement Gezondheidszorg Paard.

Een meer persoonlijke noot is hier zeker ook op zijn plaats. Ten eerste wil ik mijn ouders bedanken voor het geduld dat zij met mij hebben gehad en het vertrouwen dat zij mij altijd hebben gegeven. Ik moest en zou diergeneeskunde studeren ook al lootte ik steeds uit en hun morele en financiële steun heeft ervoor gezorgd dat dit uiteindelijk ook is gelukt. Dat zij ook beiden mijn promotie mee kunnen maken maakt van mij een rijk en gelukkig mens.

Als laatste natuurlijk ons gezin. Ik kan mij voorstellen dat Henny, Janneke, Jeltje en Koen denken: alweer als laatste? De werkdagen waren lang, de werkavonden en werknachten ook en in een gezin met een studerende moeder, schoolgaande, puberende en fanatiek sportende kinderen geeft dat op zijn zachts gezegd wel eens problemen. Hopelijk zijn we er sterker uit gekomen, maar in elk geval in het besef dat ook in onze relatie elasticiteit grenzen heeft, zeker als die steeds van een kant moet komen.

Mijn ultieme uitdaging is om weer een "normale" echtgenoot en vader te worden!

Joop Loomans
September 2008

