

Pilot epidemiological study of attitudes towards pain in horses

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This preliminary study investigated the attitudes, and evaluated the current practice of a sample of the veterinary profession in the UK in relation to the management of pain in horses. In June 2001, a questionnaire was posted to 260 veterinarians in specialised equine practice, and 140 veterinarians in general practice with a significant equine caseload. There was a 25 per cent response rate to the questionnaire, which recorded information about the availability and prescription of analgesic drugs, the factors influencing the selection of analgesics and their administration, and estimates of the severity of pain associated with selected clinical conditions. There were considerable variations in the practices applied to manage pain in horses, implying that there are similar attitudinal barriers to the optimal management of pain in horses as have been identified in other domestic species.

THE recognition and alleviation of pain associated with injury or disease is a fundamental objective of veterinary medicine. Although great progress has been made in understanding the physiology and treatment of pain over the past 20 years, the management of pain in people and animals remains inconsistent and suboptimal (Schechter 1989, Hansen and Hardie 1993, American Pain Society Quality of Pain Committee 1995, Larue and others 1995, Dohoo and Dohoo 1996a, Salmon and Manyande 1996, Capner and others 1999).

The evaluation and analysis of the attitudes and practice of medical staff towards the management of pain have led to improvements in both the medical teaching curriculum, and in the wellbeing of patients (Pilowsky 1988, Campbell 1992, Wilson and others 1992, American Pain Society Quality of Pain Committee 1995). Veterinary attitudes and working practices relating to the management of pain in dogs and cats have also been evaluated (Hansen and Hardie 1993, Dohoo and Dohoo 1996a, b, Capner and others 1999). These studies all concluded that the recognition and management of pain was suboptimal, and they identified a considerable disparity between the appreciation of animal pain by veterinarians and the actions taken to resolve that pain. To date, there have been no studies of attitudes and working practices in relation to the management of pain in horses.

'Pain behaviour' is highly species specific and poorly defined, and its recognition in horses has been the subject of recent debate in the veterinary press (Capner 2001, Flecknell and others 2001, Harris 2001, Jones 2001). Veterinarians rely heavily on an interpretation of their patients' behaviour to guide medical treatment (Carroll 1996, Hansen 1997) and the clinical evaluation of pain in animals is a subjective procedure, dominated by personal bias, perception and philosophy (Hansen 1997, Rollin 1997, Bath 1998). The attitudes and practice of veterinarians towards the management of pain in horses may differ from that they provide to other companion animal species, both because of the diverse uses of horses in modern society (Short 1995) and because of the relative lack of information about effective pain management in horses (Clutton 2001, Taylor 2001).

This pilot study aimed to investigate the attitudes, and evaluate the current practice of a sample of veterinary practitioners in the UK towards the management of pain in horses.

MATERIALS AND METHODS

A questionnaire was posted to 400 veterinary practitioners in the UK. They were selected at random from the Royal College of Veterinary Surgeons' Directory of Veterinary Practices, and included 260 practitioners in specialised equine practice and

140 practitioners in mixed practices with a significant equine caseload. After an interval of five weeks, a reminder was posted. The questionnaires were completed anonymously and returned in a self-addressed envelope for data analysis.

The questionnaire consisted of nine sections. Sections 1 and 2 collected demographic information (age, gender, qualifications, year of graduation, school attended and type of practice) and information about the relative proportions of racehorses, competition horses, breeding horses, and pleasure horses and ponies covered by the practice. Section 3 listed all the analgesic drugs currently licensed for use in horses and also the analgesic drugs which, although presently unlicensed in the UK are nonetheless considered on the basis of clinical and experimental evidence to be suitable for use in horses. Respondents were asked to identify the drugs available in their practice and highlight the specific drugs they used. In section 4, they were asked to attribute a 'pain severity score' (from 0 to 10, where 0 indicated no pain and 10 the worst pain imaginable) to a list of specific clinical conditions or surgical procedures, and then to describe their preferred analgesic management, detailing the agents used, the dose and the approximate frequency of administration, for each condition. Section 5 investigated the factors that influenced the selection of a particular analgesic treatment and any subsequent changes to that treatment in specific clinical conditions (traumatic wounds, solar abscess, tendon injury, acute colic, acute laminitis, chronic laminitis, chronic osteoarthritis and surgical trauma). In section 6, respondents were asked to indicate the importance (not important, fairly important or very important) that they attached to the factors influencing their selection of a non-steroidal anti-inflammatory drug (NSAID) or opioid drug. Section 7 asked them to provide information about extradural analgesic techniques. In section 8, they were asked to rank five sources of information (veterinary school, personal experience, journal articles, regional meetings and national meetings) using a five-point scale, where 1 indicated the most important and 5 the least important. In section 9, they were asked whether they considered their knowledge about the recognition of pain in horses and their knowledge about analgesic treatments was adequate or inadequate.

Data handling and analysis

To facilitate data analysis, the respondents' year of graduation was categorised into before 1990 and after 1990, and their age was categorised into 30 years old or less, 31 to 39 years old and 40 years old and over. The data were analysed only when 80 per cent or more of the respondents completed the relevant section of the questionnaire; this criterion was satisfied for colic (spasmodic and surgical), castration and acute musculo-skeletal pain (including traumatic soft tissue injury, traumatic

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TABLE 1: Percentage demographic information about the 61 male and 32 female respondents to the questionnaire

	Age (years)			Year of graduation		Postgraduate qualifications		Practice type			School					
	≤30	31-39	≥40	<1990	≥1990	0-1	≥2	Equine	Mixed	Bristol	Cambridge	Edinburgh	Glasgow	Liverpool	London	Out of UK
Male	26.2	31.2	42.6	55.7	44.3	82	18	80.3	19.7	11.5	11.5	23.2	6.6	14.8	19.7	13.1
Female	43.8	34.4	21.9	37.5	62.5	81.3	18.8	84.4	15.6	12.5	21.9	6.2	25.0	9.4	12.5	12.5

tendon injury, mild and severe laminitis, acute tendonitis and acute solar abscessation). Pearson correlation coefficients were used to investigate potential associations between the demographic factors (age, year of graduation, school of graduation, postgraduate qualifications and practice type) and the pain severity scores or selection of analgesic agents. Associations were considered significant when $P \leq 0.05$.

Respondents assigned 'pain severity scores' in two ways: either as a range of values, for example, 7 to 9, or as an exact value, for example, 7, 8 or 9. As a result of this variation, two types of data analysis were applied to the pain severity scores. When pain severity was scored as a range of values, the scores were categorised into 'low pain severity' (range 0 to 5), 'high pain severity' (range 6 to 10) and 'variable pain severity' (range including values in both these categories). There was a wide variation in the range of scores assigned to the pain associated with spasmodic colic, and all the respondents assigned 'variable pain severity' scores with a large range. As a result the statistical analysis of the data relating to spasmodic colic pain investigated the differences in the amplitude of the indicated range of pain scores. The data relating to colic pain scoring were analysed by using a variable that indicated the degree of variation within each range, for example, if the indicated range was 1 to 7, then the degree of variation was 7.

All the respondents administered licensed drugs in accordance with the dosage information cited in the Compendium of Data Sheets for Veterinary Products (Anon 2001), and it was therefore considered unnecessary to analyse the potential variability in dosage or frequency of administration.

RESULTS

Of 400 questionnaires posted, 102 were returned. Of these, 93 were used for data analysis and the other nine were rejected because the respondents no longer treated horses.

Demographic information

The demographic information is summarised in Table 1. A comparison with the demographic data given in the Royal College of Veterinary Surgeons (RCVS) manpower survey (RCVS 2000) indicated that the age range, gender ratio and veterinary schools attended by the respondents were representative of the current population of veterinary surgeons in the UK; 66.4 per cent of them were male. Female respondents tended to be

younger than male respondents; 62.5 per cent of females and 44.3 per cent of males graduated in, or after, 1990. There was no effect of gender on the number of postgraduate qualifications held by the respondents. Eighty-four per cent of female respondents and 80 per cent of male respondents were employed in specialist practice (66 per cent of the questionnaires were posted to respondents in specialised equine practice). Respondents were graduates of all six veterinary schools in the UK, with no clear bias towards any single school.

Fig 1 summarises the population of horses treated. In both specialised equine and mixed practice, the highest proportion of the horses were used for pleasure; 18 per cent were used for racing, 24 per cent for competition, 15 per cent for breeding and 43 per cent for pleasure. In the mixed practices, horses contributed 26.6 per cent of the total caseload.

Analgesic drugs available in practice

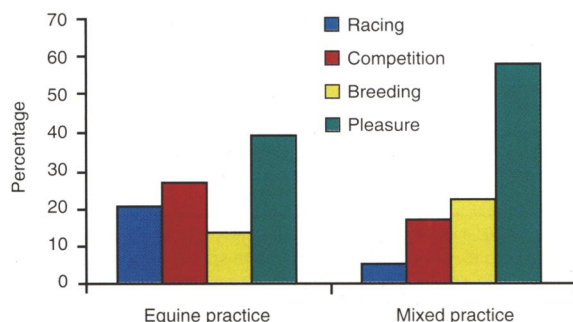
Table 2 shows the availability and use of analgesic drugs. All the respondents had access to, and prescribed, NSAIDs; phenylbutazone, flunixin and dipyrone/hyoscine were the most commonly available and prescribed. All the respondents had access to at least one opioid drug, most commonly butorphanol. There was a disparity between the availability and the extent of prescription of certain drugs, particularly more recently licensed NSAIDs and opioids other than butorphanol. Both phenylbutazone and flunixin were available to, and prescribed by, over 95 per cent of the respondents, but although 73 per cent, 72 per cent, 57 per cent and 47 per cent of them had access to carprofen, ketoprofen, meclufenamic acid and

TABLE 2: Analgesic drugs which the 93 respondents indicated were available (stocked) within their practice and which they used

Drug type and generic name	Available to	Used by
NSAIDs		
Phenylbutazone	92	92
Phenylbutazone/ramifenazone	49	34
Flunixin	90	90
Carprofen	68	48
Ketoprofen	67	31
Tolfenamic acid	20	7
Dipyrone/hyoscine	86	75
Vedaprofen	25	17
Meclufenamic acid	53	27
Eltenac	44	24
Opioids		
Buprenorphine	25	11
Butorphanol	90	89
Methadone	23	12
Morphine	51	39
Pethidine	53	27
Local anaesthetics		
Lignocaine	85	76
Bupivacaine	59	54
Mepivacaine	89	82
Other		
Xylazine	85	73
Detomidine	86	82
Romifidine	87	79
Ketamine	88	79
Other	11	10

NSAIDs Non-steroidal anti-inflammatory drugs

FIG 1: Percentages of different types of horse which made up the caseload of purely equine practices and mixed practices



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eltenac, respectively, these drugs were prescribed by only 52 per cent, 33 per cent, 29 per cent and 26 per cent of the respondents. Butorphanol was available to, and prescribed by, over 95 per cent of the respondents, but although buprenorphine, methadone and pethidine were available for use by 27 per cent, 25 per cent and 57 per cent of them, they were prescribed by only 12 per cent, 13 per cent and 29 per cent, respectively.

Factors influencing the choice of analgesic drugs

Table 3 summarises the factors which influenced the selection of a particular NSAID or opioid analgesic. The key factors were the drugs' perceived 'analgesic potency' and, in the case of NSAIDs, their 'anti-inflammatory effect'.

Pain assessment and use of analgesic drugs

The distribution of clinical pain severity scores is summarised in Tables 4 and 5. The majority of the respondents provided information relating to all the clinical conditions listed in the questionnaire.

Colic The distribution of the scores assigned by 88 respondents to colic pain is summarised in Table 4. Pain scoring for spasmodic colic, whether a range of values or an exact score was assigned, was not influenced by the demographic factors age, gender, postgraduate qualifications or veterinary school attended. Forty-eight per cent of the 88 respondents used a range of values to score pain associated with spasmodic colic, and there was a significant correlation between the amplitude of the range of scores and the year of graduation ($P<0.05$); respondents who graduated before 1990 used a smaller range of scores than those who graduated later.

Fifty-two per cent of the 88 respondents used a range of values to score pain associated with potential surgical colic, and 48 per cent assigned an exact value. When a range of values was assigned, demographic factors did not influence the pain scores. Graduates of Liverpool University and veterinary schools outside the UK gave more variable scores than graduates of other schools. When an exact score was assigned, 90 per cent of the respondents attributed a high pain severity score to potential surgical colic.

Dipyrone/hyoscine was the drug most frequently administered for the treatment of spasmodic colic, and flunixin was the drug most frequently administered for the treatment of potential surgical colic. The selection of drugs was significantly influenced by the veterinary school the respondents attended ($P<0.01$). Graduates of Glasgow, London, Edinburgh and Dublin University veterinary schools used only dipyrone/hyoscine or NSAIDs; graduates of Liverpool and Cambridge used butorphanol in addition to dipyrone/hyoscine and NSAIDs; graduates of Bristol and veterinary schools outside the UK used α -2 agonists (xylazine and romifidine) in addition to dipyrone/hyoscine, NSAIDs and butorphanol.

Castration The distribution of clinical pain severity scores assigned to castration is summarised in Table 5. Twenty of the 88 respondents used a range of values to score the severity of pain associated with castration, and 68 assigned an exact value. In neither case were the scores significantly affected by demographic factors.

Table 6 summarises the drugs used to provide analgesia following castration. Twelve of the 88 respondents did not administer analgesic drugs. The selection of a specific drug was significantly influenced by the pain score ($P<0.05$), and the 12 respondents who did not prescribe analgesia all assigned a score within the 'low pain severity' range; the other 55 respondents who assigned a score within the 'low pain severity' range prescribed analgesia after a castration. All the respondents who assigned a score within the 'high pain severity' range prescribed analgesia after a castration. Twenty-one per cent of the respondents who graduated before 1990 did

TABLE 3: Factors influencing the selection of non-steroidal anti-inflammatory drugs (NSAIDs) and opioids

Type of drug	Factor	Number of respondents considering the factor			Total number of respondents
		Unimportant	Fairly important	Very important	
NSAID	Cost	15	64	11	90
	Information available	11	39	38	88
	Analgesic potency	1	6	84	91
	Anti-inflammatory effect	1	2	87	90
	Potential side effects	4	43	43	90
Opioid	Cost	31	51	8	90
	Information available	8	39	39	86
	Requirement for record keeping	39	26	25	90
	Personal safety	42	23	24	89
	Analgesic potency	0	8	80	88
	Behavioural side effects	9	44	36	89
	Gastrointestinal side effects	8	45	36	89

not administer analgesic drugs, compared with only 7 per cent of those who graduated later.

Musculoskeletal pain (traumatic soft tissue injury, acute tendonitis and acute solar abscessation). The distribution of 'pain severity' scores for musculoskeletal pain is summarised in Table 5. Pain severity scoring for traumatic soft tissue injury was significantly influenced by 'year of graduation' ($P<0.01$); the majority of respondents who graduated before 1990 assigned a 'low pain' score whereas the majority of respondents who graduated later scored it as 'high' or 'variable pain severity'. The selection of analgesic drugs for the treatment of pain associated with acute tendonitis (Table 7) was significantly influenced by 'age' ($P<0.01$) and 'year of graduation' ($P<0.01$). Pain severity scoring for other musculoskeletal conditions was not significantly influenced by demographic factors.

Table 8 summarises the analgesic drugs selected by respondents to provide analgesia for pain associated with mild acute laminitis. The selection was significantly influenced by 'age' ($P<0.05$), but not by other demographic factors, although there was a trend towards a negative association between the choice of analgesic drug and the year of graduation ($P=0.057$).

Extradural techniques Fifty-eight per cent of the respondents used extradural analgesic techniques, most frequently for perineal surgery (40 per cent of respondents to this section), hindlimb injuries (21 per cent), foalings and dystociae (17 per cent), correction of retrovaginal fistulae (13 per cent), standing surgery (9 per cent), rectal tears/prolapses (8 per cent), Caslick's procedure (6 per cent), perineal lacerations (5 per cent) and uterine prolapses (5 per cent). The agents administered by extradural injection were xylazine (used by 44 per cent of respondents), mepivacaine (42 per cent), morphine (38 per cent) and lignocaine (36 per cent); 6 per cent of respondents also administered bupivacaine and detomidine by extradural injection.

TABLE 4: Pain scores assigned to colic

Range of values	Percentage of answering respondents				
	Pain score assigned to spasmodic colic		Pain score assigned to potential surgical colic		
	Low pain severity (≤ 5)	High pain severity (> 5)	Range of values	Low pain severity (≤ 5)	High pain severity (> 5)
48	31	21	52	5	43

Eighty-eight of the 93 respondents assigned pain scores. The respondents who assigned a range of values to describe pain associated with spasmodic colic all assigned scores within the 'variable pain severity' range. The respondents who assigned a range of values to describe pain associated with potential surgical colic, all assigned scores within the 'high pain severity' range.

TABLE 5: Number of respondents who assigned different pain scores to castration and acute musculoskeletal conditions

	Condition					
	Castration (n=88)	Traumatic soft tissue injury (n=86)	Mild acute laminitis (n=87)	Severe acute laminitis (n=87)	Solar abscess (n=86)	Acute tendonitis (n=87)
Pain severity range	20	38	24	56	22	26
Low (0-5)	15	17	19	0	1	7
High (6-10)	20	0	0	30	10	6
Variable	3	21	5	26	11	13
Pain severity exact value	68	48	63	31	64	61
Low (≤ 5)	48	44	55	2	4	26
High (> 5)	20	4	8	29	60	35

TABLE 6: Relationship between the category of pain severity score assigned and the selection of a particular analgesic drug for managing pain after a castration, as indicated by the numbers of the 88 respondents who cited a particular drug as 'drug of choice' for each pain category

Drug	Pain category		
	Low (n=67)	High (n=18)	Variable (n=3)
No analgesia	12	0	0
Phenylbutazone	42	10	1
Flunixin	5	5	0
Ketoprofen	1	0	1
Dipyron/hyoscine	1	0	0
Butorphanol	2	1	0
Detomidine	0	1	0
Romifidine	0	1	1
Other (not specified)	4	0	0

Factors influencing the selection and administration of analgesics For all conditions, the animal's demeanour and heart rate were cited as the most frequently used factors influencing the selection of an analgesic and for making any adjustments to the dose.

Sources of information about the treatment of pain

Personal experience was cited as the most important source of knowledge about pain-related issues (ranked as 'most important' by 45.5 per cent of respondents), followed by undergraduate education at veterinary school (29.4 per cent). Continuing professional development by reading journals or attending national and regional meetings was not considered to be an important source of knowledge about pain-related issues; 62.9 per cent of respondents considered their knowledge about analgesic treatments and strategies for the control of pain in horses to be adequate.

DISCUSSION

The response rate to the questionnaire was considerably lower than the response rate to questionnaires assessing similar epidemiological parameters in small animal practice (Dohoo and Dohoo 1996a, b, Capner and others 1999, Hellyer and others 1999), but it was nonetheless considered adequate to

permit a preliminary assessment of the attitudes of equine veterinary practitioners in the UK towards the management of pain in horses. Capner and others (1999) observed that it is difficult to avoid an intrinsic respondent bias in surveys that investigate attitudes and opinions in addition to collecting facts about current practice. Because the questionnaires were completed anonymously, submissions from several respondents in a single practice with strict protocols for the management of clinical cases, for example, referral hospitals (Hansen and Hardie 1993), could not be identified and taken into consideration. The respondents may have been individuals with a particular interest in pain management, and not, therefore, a representative sample of the equine veterinary profession in the UK.

All the respondents reported that they had access to several NSAIDs and at least one opioid. There was a disparity between the availability of NSAID drugs and their actual prescription, particularly with respect to more recently licensed drugs such as eltenac and meclofenamic acid. The apparent preference for older NSAID agents contrasts with the preference of veterinarians in small animal practice for more recently licensed agents such as carprofen and ketoprofen (Capner and others 1999). There was also a disparity between the availability and prescription of opioid analgesics. When asked to cite their selection of analgesics for the treatment of specific clinical conditions, respondents 40 years old or older were more likely to use recently licensed NSAIDs than younger respondents for the treatment of mild laminitis and acute tendonitis.

The factors that respondents considered most important in relation to their selection of analgesic drugs may help to explain the apparent disparity between their availability and their rate of prescription. It is reasonable to assume that the universal popularity of phenylbutazone is largely due to its low cost in comparison with other licensed NSAIDs and its familiarity, but cost was not considered an important factor in the selection of NSAIDs. 'Analgesic potency' was considered a key factor in the selection and use of both NSAID and opioid agents. There have been many studies of the absolute and relative 'potency' of analgesic agents in experimental models of pain (Kalpravidh and others 1979, Pippi and Lumb 1979, Boatwright and others 1996), but few have evaluated their analgesic efficacy in the management of clinical pain in horses. Johnson and others (1993) compared the efficacy of phenylbutazone, flunixin and carprofen administered after arthroscopic surgery, and observed no significant differences between the

TABLE 7: Percentages of respondents of different ages who graduated before 1990 or later who used particular analgesic drugs in the treatment of acute tendonitis

Analgesic drug	Age (years)			Year of graduation	
	≤ 30	31-39	≥ 40	Before 1990	1990 or later
None	0	3.9	3.5	0	0
Phenylbutazone	88.9	80.8	62.1	85.4	96.7
Flunixin	7.4	15.4	13.8	9.8	2.3
Carprofen	3.7	0	6.9	0	0
Ketoprofen	0	0	3.5	2.4	0
Meclofenamic acid	0	0	3.5	2.4	0
Eltencac	0	0	3.5	0	0
Butorphanol	0	0	3.5	0	0

TABLE 8: Percentages of respondents of different ages who used particular analgesic drugs in the treatment of mild acute laminitis

Drug	Age (years)		
	≤ 30	31-39	≥ 40
Phenylbutazone	96.3	100	78.6
Flunixin	3.7	0	14.3
Ketoprofen	0	0	3.6
Meclofenamic acid	0	0	3.6

treatment groups either in their requirement for further postoperative analgesia, or in the subjective pain scores assessed after recovery. They also observed that horses treated with butorphanol were significantly less likely to require further postoperative analgesia than horses that did not receive an opioid. Jochle and others (1989), in a multicentre study, compared the analgesic and physiological effects of detomidine with butorphanol, flunixin and xylazine in clinical cases of colic, and observed significant differences in both subjective and objective pain scores assessed after the treatments.

Although analgesic potency was cited as a key factor in the selection of opioids, the respondents expressed a strong preference for butorphanol (a mixed opioid agonist/antagonist) over morphine or other opioid receptor 3 (OP₃)-selective opioid agonists. In a study of the postoperative use of analgesic drugs in dogs and cats, Dohoo and Dohoo (1996a) recorded a strong preference for butorphanol over more potent OP₃-selective agents for providing analgesia after orthopaedic surgery, despite the ample evidence that OP₃-selective agents are more effective for the relief of moderate to severe pain associated with surgery in these species (Pascoe 2000). The efficacy of morphine and other OP₃-selective opioid agonists for the relief of clinical pain in horses remains unproven, with conflicting reports of their clinical efficacy.

It appears that the estimates of 'analgesic potency' applied to the management of pain in horses are based on personal clinical experience rather than on published experimental evidence. The 'selectivity' of analgesics for particular organ systems is also a subject of debate. It has been suggested by Schatzmann (2000) that phenylbutazone has a specific action on the locomotor system, and on the hoof and distal joints in particular, whereas flunixin and metamizole are more effective for colic pain. However, such opinions are based on personal preference rather than on clinical evidence. If veterinarians are to use 'analgesic potency' as a criterion for the selection of appropriate analgesic drugs, there is a clear need for their efficacy to be evaluated and compared in the clinical rather than the experimental domain.

The majority of the respondents considered the risk of side effects to be fairly or very important in relation to the selection of NSAIDs. The potential adverse effects of NSAIDs in horses are well recognised, with foals and adult horses undergoing physiological stress being at particular risk (Lees and Higgins 1985, Macallister and others 1993). Experimental studies have demonstrated that high doses of NSAIDs have toxic effects (Snow and others 1979, Meschter and others 1990, Macallister and others 1993); the toxic potential was greatest for phenylbutazone, less for flunixin and least for ketoprofen. However, there have been few reports of toxic effects in horses treated with NSAIDs at clinically effective licensed doses, and the fact that NSAIDs are universally prescribed for the long-term pain relief of chronic musculoskeletal conditions in horses suggests that toxicity is rarely observed in clinical practice. In contrast, in small animal practice, the toxic effects after the perioperative or prolonged administration of NSAIDs are a real concern. The preferential use of more recently licensed NSAIDs such as carprofen and meloxicam in small animal practice (Capner and others 1999) probably results from the clinical evidence that they are less likely to produce adverse effects in dogs and cats than the older NSAIDs such as phenylbutazone (Matthews and Lindsay 1990, Matthews 2000).

The potential for toxic side effects, such as excitement and unpredictable reactions, was also considered to be fairly or very important in relation to the selection of opioid drugs, probably in the light of recent reviews of opioid analgesia in horses (Short 1995, Schatzmann 2000). Similar concerns were identified by Dohoo and Dohoo (1996b) in relation to the administration of OP₃ agonists to cats. Many studies have demonstrated the toxic effects of high doses of opioid drugs (Kamerling and others 1989), but Lentz (1936) demonstrated

that clinically effective (analgesic) doses of OP₃-selective opioids produced no adverse effects in horses. Later studies reported minimal behavioural side effects after intravenous doses of 100 to 300 µg/kg in horses which were clinically pain free when the opioid was administered (Muir and others 1978, Combie and others 1979). In addition, no abnormal behaviour was observed in horses which received pethidine after general anaesthesia for elective surgery or radiography (Taylor 1986), or in horses which received butorphanol during general anaesthesia for elective surgery (Johnson and others 1993). The common apprehension in the veterinary profession in relation to the side effects associated with opioid analgesic agents, despite well-documented evidence to the contrary, indicates that clinical studies are needed to evaluate their efficacy in equine practice.

A wide range of pain scores was assigned by the respondents to specific conditions. For example, there was an equal division of low pain severity and high pain severity scores to spasmodic colic, acute tendonitis and acute solar abscessation. Certain conditions or procedures were generally considered to be less painful than others; for example, over 70 per cent of the respondents assigned a low pain severity score to castration and mild laminitis, whereas 90 per cent assigned a high pain severity score to potential surgical colic. In contrast with the results of studies of attitudes to pain management in small animal practice (Dohoo and Dohoo 1996b, Capner and others 1999), pain scoring was not influenced by age, gender, number of years since graduation or school of graduation. Capner and others (1999) recorded that higher pain scores were assigned by females and veterinarians who graduated after 1990, and Dohoo and Dohoo (1996b) also observed that female veterinarians were more sensitive than males to perceptions of pain. Although there was no significant effect of age on the pain scores attributed to castration, the respondents who were 40 years old or older were almost three times more likely to provide no postoperative analgesia after a castration than the respondents who were 30 years old or younger.

With the exception of specific signs attributable to abdominal distress or traumatic injury, respondents cited the horse's demeanour and heart rate as the major criteria they used to assess pain. However, despite the significance given to heart rate as a sensitive and accurate indicator of the severity of pain, no direct relationship between heart rate and pain severity has been demonstrated in horses. In dogs it has been shown that changes in heart rate and respiratory rate are not directly related to increasing pain intensity (Holton and others 1998). While recognising that physiological responses to pain are species specific, it cannot be assumed, in the absence of experimental or clinical evidence, that heart rate provides a sensitive and reliable indicator of pain intensity in horses.

Although demeanour – a composite of behaviour and attitude – was indicated to play a large part in the assessment of pain in horses, there appears to be little consensus within the veterinary profession on what constitutes pain behaviour in horses, as has been illustrated recently by a debate on the presence, or absence, of pain after a castration. Postcastration discomfort in horses has been assessed by using a subjective scale. Prugner and others (1991) reported that the administration of eltenac for three days postoperatively, significantly reduced postcastration pain in colts. However, it has recently been suggested that the castration of a horse is not a particularly painful procedure, so that the provision of analgesia is unnecessary and indicative of 'unwarranted subjective sympathy' (Green 2001). Pain associated with different castration techniques has been studied more extensively in other species, particularly lambs and calves, which are routinely castrated in the first few weeks of life. In these species, a quantitative objective evaluation of their behaviour indicates that the pain experienced can be significantly reduced by the particular castration technique used, and by the provision of analgesia (Kent and others 1995,

1998, Graham and others 1997). The lack of consensus in the veterinary profession about whether a horse feels pain after being castrated (Capner 2001, Flecknell and others 2001, Harris 2001, Jones 2001) suggests that pain behaviour is not well recognised or fully appreciated in horses.

This pilot survey indicates that there are wide variations in the methods used to control pain in horses by the veterinary profession in the UK, and it suggests that there are similar barriers to adopting the best methods as have been recognised in other domestic species. To overcome these

barriers, further studies are required to improve the understanding of the key factors which affect the attitudes and practice of veterinary surgeons towards the recognition and control of pain in horses.

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