



Survey of the UK veterinary profession 2: sources of information used by veterinarians

T. D. Nielsen, R. S. Dean, A. Massey, M. L. Brennan

Access to the most up-to-date evidence is an important cornerstone for veterinarians attempting to practice in an evidence-based manner; therefore, an understanding of what and how information is accessed is vital. The aim of this study was to identify what resources the UK veterinary profession access and regard as most useful. Based on questionnaires received from veterinarians, the *Veterinary Times* was nominated as most often read journal or magazine by respondents (n=3572, 79 per cent). *In Practice* (n=3224, 82 per cent) and the *Veterinary Record* (n=165, 34 per cent) were seen as most useful by clinicians, and non-clinicians, respectively. Google was the most often nominated electronic resource by all respondents (n=3076, 71 per cent), with Google (n=459, 23 per cent) and PubMed (n=60, 17 per cent) seen as most useful by clinicians and non-clinicians, respectively. The abstract and conclusion sections were the most read parts of scientific manuscripts nominated by all respondents. When looking for assistance with difficult cases, colleagues were the common information choice for clinicians. Different sections of the veterinary profession access information, and deem resources useful, in different ways. Access to good quality evidence is important for the practice of evidence-based veterinary medicine, and therefore, researchers should think about disseminating their findings in a targeted way for optimal use by the profession.

Introduction

Evidence-based veterinary medicine (EVM) has been advocated for a number of years (Cockcroft and Holmes 2003). An important part of EVM is to find relevant evidence in order to identify the newest information to translate into practice (Robertson 2007, Vandeweerd and others 2012a). Veterinarians can use various sources of information to gain knowledge on new conditions and keep up to date with new findings. The amount of veterinary information and literature is increasing (Buchanan and Wooldridge 2011) with more than 1100 journals with veterinary content available (Grindlay and others 2012). This volume of material makes it potentially difficult for veterinarians to keep up to date and to discriminate what is the most useful and valuable content. Additionally, it is more challenging for veterinary researchers to know exactly where to publish in order to disseminate their findings widely, and to ensure they reach their target audience (Everitt 2008).

There have been a small number of studies conducted looking at resources used by clinicians in the UK and the USA; however, these were conducted some time ago. Raw (1987) conducted a national survey of libraries in veterinary practices in the

UK, and found that most practices received the *Veterinary Record* (526 out of 537 practices) and the *Journal of Small Animal Practice* (411 out of 537 practices). However, only 42 per cent of the practices receiving the *Veterinary Record* nominated this journal as the most useful, while in comparison, 61 per cent of the 24 practices that received the *Journal of the American Animal Hospital Association* preferred this journal. Most practices had between 11 and 30 books, with a range of 0 to more than 500. Pelzer and Leysen (1991) determined that US practitioners used journals, books and continuing education to keep up to date based on 287 questionnaires from veterinarians. They found that three per cent of practitioners with access to a personal computer at work used it to search databases for veterinary journals or books, and four per cent used it for computer-assisted diagnosis. A more recent study conducted by Wales (2000) reported that of 82 UK veterinarians, most used journal articles, text books and conferences as the three most common sources of drug, diagnostic and therapeutic information.

However, these studies involved small samples of the profession, and did not include non-clinicians. In addition, with the evolution of the types of electronic resources available and the advent of social media (Rose 2014), it is likely that veterinarians currently access information very differently than they did 10–30 years ago. To be able to understand what information veterinarians require to practice in an evidence-based manner, and how researchers should communicate their research findings to the veterinary profession, it is important to recognise how resources are used. Currently, it is not known how different facets of the veterinary profession search for or use information available to them.

The aim of this study was to identify what resources the UK veterinary profession use and what resources they find useful.

Veterinary Record (2015)

doi: 10.1136/vr.103068

T. D. Nielsen, DVM, PhD, DipECVPH,
R. S. Dean, BVMS, PhD, DSAM(fel),
MRCVS,

A. Massey,

M. L. Brennan, BSc(VB), BVMS,
PGCHE, PhD, DipECVPH (PM), MRCVS,
FHEA,

Centre for Evidence-based Veterinary
Medicine, School of Veterinary

Medicine and Science, The University
of Nottingham, Sutton Bonington
Campus, Loughborough LE12 5RD, UK

E-mail for correspondence:
marnie.brennan@nottingham.ac.uk

Provenance: not commissioned;
externally peer reviewed

Accepted June 15, 2015

Additional objectives were to identify resources that veterinary clinicians use to inform clients as well as what information sources clinicians perceive clients to use.

Materials and methods

The study population, questionnaire development, pretesting, piloting and data management have been described in more detail in [Nielsen and others \(2014\)](#). A brief summary is included here as well as details relevant for the parts of the questionnaire analysed here.

Questionnaire

A questionnaire was used to collect data from all veterinarians in the UK (the target population). The questionnaire was sent to the Royal College of Veterinary Surgeons (RCVS) register of members (the sampling frame), which consists of individual members, including non-practicing and retired individuals, who have consented for their details to be made available to external organisations for research or marketing purposes.

The questionnaire was made up of 36 questions, and had four main sections; a copy of the questionnaire is available on request. The questions in the first two sections (respondent demographics and common conditions seen in practice) have previously been described ([Nielsen and others 2014](#)). Results here relate to the third part of the questionnaire; results relating to the fourth part of the questionnaire will be reported in a separate manuscript.

In the third section of the questionnaire, respondents were asked what sources of information or evidence they accessed. Questions were asked about which journals or magazines were read, and the electronic resources that were accessed. Lists of predefined journal/magazine and electronic resources were given (eg, [Fig 1](#)). In addition, respondents could add up to four additional journals/magazines and electronic sources in free text boxes. Participants were then asked to write the number found adjacent to the resource in a separate box for those resources they found most useful for both the journal/magazine and electronic sources separately. To create the predefined lists of resources, a convenience sample of 22 UK-based academic and private veterinarians were asked what resources (both journals and electronic resources) they accessed; their responses were used to create the lists, with additional resources added in by the final author if deemed important.

Questions about which parts of *The Veterinary Times* (<http://www.vetsonline.com/publications/veterinary-times/about.html>) and the *Veterinary Record* (<http://veterinaryrecord.bmj.com/site/about/index.xhtml>) were read were asked; these publications are commonly accessed by UK veterinarians, and

are often found in veterinary practices across the UK. Clinicians (ie, respondents who undertook any amount of clinical work—defined as working for a veterinary organisation seeing animals either in a clinic or by visiting clients at their premises) were asked a series of additional questions. These included what their preferred information sources for difficult clinical cases were, and how they preferred to receive research findings. They were also asked how they gave clients information, and what information sources they perceived clients accessed.

The questionnaire was pretested and piloted before being posted out to the mailing list. The questionnaire could also be completed online. Reminders to non-responders were sent 6 and 10 weeks after the initial questionnaire was distributed.

Data management and analysis

Paper-based questionnaires were scanned using TeleForm V10.5.2 (Verity Inc., 2010), and merged with electronic responses in a Microsoft Access V14.0.6 (2010, Microsoft) database. The dataset was transferred to a Microsoft Excel V14.0.6 (2010, Microsoft) spreadsheet for data management. Responses were checked for errors, and if an error was found, the questionnaire was compared with the original paper or electronic version. Where relevant, respondents were divided into clinicians and non-clinicians (those stating that they did not undertake any clinical work). Clinicians were further divided into subgroups; small animal (including exotics), production animal (cattle, sheep and goats) and equine, depending on what species they nominated that they worked with. Clinicians could be included in more than one subgroup if they worked with more than one species. For questions where respondents did not follow instructions correctly (eg, ticking more than one box when only one was required), a 'sensitivity analysis' was undertaken. This entailed analysing the information twice, once including and once excluding the incorrect answers, with the results compared, to assess any effect.

Frequency tables and graphs were generated in Excel and RStudio ([RCORE Team 2012](#)). Comparison of proportions between clinicians and non-clinicians were done using z-tests (<http://epitools.ausvet.com.au/content.php?page=z-test-2>).

Results

Of the 14 532 questionnaires that were distributed, responses were received from 5407 (37 per cent). Of these, 259 were return-to-sender, 230 were retired veterinarians, 72 were returned blank, three stated that the veterinarian was deceased and one was blank except for one comment box. This resulted in 4842 (33 per cent) useable responses. A total of 3982 respondents replied that they undertook clinical work, with 650 respondents

Q29. From the journal or magazine sources listed below, please indicate those that you read (**Please mark all that apply**)

- | | |
|--|--|
| <input type="checkbox"/> 1. British Poultry Science Journal | <input type="checkbox"/> 12. Journal of Swine Health and Production |
| <input type="checkbox"/> 2. Cattle Practice | <input type="checkbox"/> 13. Journal of Veterinary Internal Medicine |
| <input type="checkbox"/> 3. Companion (BSAVA) | <input type="checkbox"/> 14. Pig Journal |
| <input type="checkbox"/> 4. Equine Veterinary Education | <input type="checkbox"/> 15. Small Ruminant Research |
| <input type="checkbox"/> 5. Equine Veterinary Journal | <input type="checkbox"/> 16. The Veterinary Record |
| <input type="checkbox"/> 6. Farmers Weekly | <input type="checkbox"/> 17. UK Vet |
| <input type="checkbox"/> 7. In Practice | <input type="checkbox"/> 18. Veterinary Business Journal |
| <input type="checkbox"/> 8. Journal of the American Veterinary Medical Association | <input type="checkbox"/> 19. Vet Clinics North America |
| <input type="checkbox"/> 9. Journal of Dairy Science | <input type="checkbox"/> 20. Veterinary Practice |
| <input type="checkbox"/> 10. Journal of Feline Medicine and Science | <input type="checkbox"/> 21. Veterinary Surgery |
| <input type="checkbox"/> 11. Journal of Small Animal Practice | <input type="checkbox"/> 22. Veterinary Times |

FIG 1: Predefined list of journal or magazine resources given to participants in the veterinary questionnaire. BSAVA, British Small Animal Veterinary Association

TABLE 1: The five most read journals or magazine sources nominated by different subgroups of the UK veterinary profession based on 4537* responses to a national survey

Journal rank	All respondents (n=4537*)	Non-clinicians (n=612*)	Clinicians (n=3918*)		
			Small animal† (n=3191)	Production animal‡ (n=1006)	Equine (n=1107)
1	Veterinary Times (3572, 79%)	Veterinary Record (481, 79%)	Veterinary Times (2739, 86%)	In Practice (883, 88%)	In Practice (894, 81%)
2	In Practice (3486, 77%)	In Practice (386, 63%)	In Practice (2568, 80%)	Veterinary Times (828, 82%)	Veterinary Times (869, 79%)
3	Veterinary Record (3146, 69%)	Veterinary Times (345, 56%)	Veterinary Record (2152, 67%)	Veterinary Record (791, 79%)	Veterinary Record (830, 75%)
4	UK Vet (1949, 43%)	Veterinary Practice (192, 31%)	Journal of Small Animal Practice (1617, 51%)	UK Vet (646, 64%)	UK Vet (537, 49%)
5	Journal of Small Animal Practice (1779, 39%)	Farmers Weekly (169, 28%)	Companion (1597, 50%)	Cattle Practice (422, 42%)	Equine Veterinary Education (479, 43%)

*Number of respondents to this question (3918 clinicians, 612 non-clinicians, 7 not stated). Clinicians could belong to more than one group if they saw more than one species

†Includes rabbits and exotics

‡Includes cattle, sheep and goats

not undertaking any clinical work; 210 did not respond to this question. For further information about responder demographics, see [Nielsen and others \(2014\)](#). Not all respondents answered all questions, and the total numbers of respondents are given for each result, where relevant.

General resources accessed by the veterinary profession

The Veterinary Times was most often nominated as the journal or magazine source read by all respondents (3572 out of 4537, 79 per cent). The Veterinary Record, Veterinary Times and In Practice were the three most read journals or magazines for all subgroups of clinicians, although their ranking differed ([Table 1](#)). Species-specific journals, including the Journal of Small Animal Practice, Cattle Practice and Equine Veterinary Education were ranked fourth or fifth by the relevant species subgroups of clinicians ([Table 1](#)). When asked which journal or magazine source was the most useful for obtaining veterinary information, all clinical subgroups nominated In Practice, whereas non-clinicians nominated the Veterinary Record ([Table 2](#)). All clinical subgroups nominated the Veterinary Times as the second most useful, except for those working with equines who nominated Equine Veterinary Education. There was not much difference within species groups between the five sources read and those deemed most useful; the Veterinary Record did not appear in the five most useful sources for equine or small animal clinicians ([Table 2](#)).

Google was most often nominated as the electronic source accessed by all respondents (3076 out of 4340, 71 per cent), as

well as the RCVS website (2324 out of 4340, 54 per cent) and the Department for Environment, Food and Rural Affairs website (DEFRA; 1709 out of 4340, 39 per cent; [Table 3](#)). Although the ranking differed between the different subgroups of clinicians, the resources nominated were largely similar, with National Office of Animal Health (NOAH), British Veterinary Association (BVA) and British Small Animal Veterinary Association (BSAVA) websites nominated ([Table 3](#)). PubMed was only accessed by non-clinicians. Equine-specific resources, such as the British Equine Veterinary Association website, was ranked the sixth most accessed website by equine clinicians. Similarly, the British Cattle Veterinary Association was ranked sixth most accessed website by production animal clinicians. Google was also nominated as the most useful electronic source by all subgroups of clinicians and PubMed by non-clinicians ([Table 4](#)). Many of the resources nominated as accessed were not nominated as the most useful by clinicians, such as the RCVS and DEFRA websites. The BVA, BSAVA and NOAH websites were ranked in the top five for access and usefulness by clinicians. In contrast, the Merck Veterinary Manual, Veterinary Information Network (VIN) and Vetstream sources were not included in the five most accessed electronic sources for clinicians, but were included in the five most useful sources as reported by these groups. This resulted in larger differences within species groups between the most accessed and most useful sources nominated. However, the response rate for the most useful electronic source question was less than 50 per cent.

Overall, 78 per cent of respondents reported that they read some or all of the Veterinary Times and 71 per cent read some

TABLE 2: The five journals or magazine sources nominated as the most useful by different subgroups of the UK veterinary profession based on 3653* responses to a national survey

Journal rank	All respondents (n=3653*)	Non-clinicians (n=447*)	Clinicians (n=3202*)		
			Small animal† (n=2620)	Production animal‡ (n=846)	Equine (n=908*)
1	In Practice (1301, 36%)	Veterinary Record (165, 34%)	In Practice (1117, 43%)	In Practice (395, 47%)	In Practice (353, 39%)
2	Veterinary Times (554, 15%)	In Practice (76, 16%)	Veterinary Times (571, 22%)	Veterinary Times (145, 17%)	Equine Veterinary Education (169, 17%)
3	UK Vet (327, 9%)	Other§ (61, 13%)	UK Vet (266, 10%)	UK Vet (88, 10%)	UK Vet (98, 11%)
4	Veterinary Record (301, 8%)	Veterinary Times (57, 12%)	Journal of Small Animal Practice (191, 7%)	Veterinary Record (53, 6%)	Veterinary Times (80, 9%)
5	Journal of Small Animal Practice (208, 6%)	Veterinary Practice (12, 2%)	Companion (152, 6%)	Cattle Practice (45, 5%)	Equine Veterinary Journal (60, 7%)

*Number of respondents to this question (3202 clinicians, 447 non-clinicians, 4 not stated). Clinicians could belong to more than one group if they saw more than one species

†Includes rabbits and exotics

‡Includes cattle, sheep and goats

§Includes publications such as Veterinary Clinical Pathology (n=28), Preventive Veterinary Medicine (n=11) and Nature (n=9)

TABLE 3: The five most accessed electronic sources nominated by different subgroups of the UK veterinary profession based on 4340* responses to a national survey

Source rank	All respondents (n=4340*)	Non-clinicians (n=597*)	Clinicians (n=3736*)		
			Small animal† (n=3043)	Production animal‡ (n=955)	Equine (n=1054)
1	Google (3076, 71%)	Google (437, 73%)	Google (2632, 70%)	Google (2140, 70%)	Google (693, 73%)
2	RCVS (2324, 54%)	DEFRA (376, 63%)	RCVS (1986, 53%)	RCVS (1665, 55%)	DEFRA (569, 60%)
3	DEFRA (1709, 39%)	RCVS (336, 56%)	BSAVA (1453, 39%)	BSAVA (1422, 47%)	NOAH (499, 52%)
4	BVA (1612, 37%)	PubMed (261, 44%)	BVA (1416, 38%)	BVA (1193, 39%)	RCVS (475, 50%)
5	BSAVA (1539, 35%)	BVA (196, 33%)	DEFRA (1333, 36%)	NOAH (1030, 34%)	BVA (464, 49%)

*Number of respondents to this question (3736 clinicians, 597 non-clinicians, 7 not stated). Clinicians could belong to more than one group if they saw more than one species

†Includes rabbits and exotics

‡Includes cattle, sheep and goats

BSAVA, British Small Animal Veterinary Association; BVA, British Veterinary Association; DEFRA, Department for Environment, Food and Rural Affairs; NOAH, National Office of Animal Health; RCVS, Royal College of Veterinary Surgeons

or all of the Veterinary Record. A higher proportion of clinicians who nominated that they read Veterinary Times read the 'Clinical pages' section compared with the non-clinicians (92 per cent v 77 per cent, $p < 0.001$; Fig 2). Additionally, 54 per cent of clinicians that read the Veterinary Record read the 'Papers' section compared with 68 per cent of non-clinicians ($p < 0.001$).

The abstract and conclusion sections were nominated as the most read parts of scientific manuscripts for both clinicians and non-clinicians with more than 85 per cent of respondents reading these sections (Fig 3). Fewer respondents nominated that they read the materials and methods section, with 29 per cent of clinicians and 35 per cent of non-clinicians reportedly reading this section. Non-clinicians were more likely to report that they read the materials and methods compared with clinicians ($p = 0.01$) as well as the results section ($p < 0.001$). Clinicians reportedly were more likely to read the conflict of interest, and the acknowledgements sections, and were more likely to state that they read all the sections of a paper.

Resources used for clinical cases and owner-related resources

E-mails were the most preferred method of receiving information from researchers about findings, followed by letters and local continuing professional development (CPD) meetings (Fig 4). The ranking for the preferred method of receiving information was similar among all clinician groups.

Colleagues were the preferred choice for information or evidence for clinicians when requiring assistance for difficult clinical cases, with practice manuals preferred less frequently (Fig 5). There were few differences between the responses from the different subgroups of clinicians; equine clinicians nominated using specialists more as their first choice of information (15 per cent) than small animal (12 per cent) and production animal clinicians (11 per cent). Some respondents answered this question

incorrectly, and nominated more than one choice for each of the first, second and third choice options.

All clinicians nominated that they gave clients information verbally during consultations (see online supplementary appendix 1), while 78 per cent gave out written/typed instructions, and 60 per cent used preprepared practice handouts. Verbal communication was the method nominated as usually used to convey veterinary information to clients (67 per cent). Clinicians, besides themselves, perceived clients to mainly get veterinary information from websites (95 per cent), friends or colleagues (85 per cent), television (52 per cent) and paraprofessionals (eg, farriers, dog groomers, breeders; 50 per cent; see online supplementary appendix 1).

Discussion

It appears that veterinarians based in the UK access and use a variety of peer-reviewed and non-peer-reviewed sources, which are to some extent targeted to the type of veterinary work carried out (eg, small animal clinical work, non-clinical work, etc).

The Veterinary Times and In Practice were nominated as the journal or magazine sources read mostly by clinicians, while Veterinary Record was nominated by non-clinicians. The responses were different when asked what the most useful sources were, with the Veterinary Record no longer appearing in the top five for clinicians (the exception being production animal veterinarians). A previous study conducted in 1989 in the USA identified a range of different resources accessed by clinicians, such as the Journal of the American Veterinary Medical Association (White 1989). The reasons why individuals accessed or used certain resources was not covered in this survey. It is likely that resources that are easy to read, commonly available and are familiar will be accessed. The Veterinary Times and UK Vet are free resources, and the Veterinary Record and In Practice come free as part of membership of the BVA (<http://www.bva>).

TABLE 4: The five electronic sources nominated as the most useful by different subgroups of the UK veterinary profession based on 2375 responses to a national survey†

Source rank	All respondents (n=2375*)	Non-clinicians (n=351*)	Clinicians (n=2019*)		
			Small animal‡ (n=1671)	Production animal§ (n=507)	Equine (n=545)
1	Google (513, 22%)	PubMed (60, 17%)	Google (393, 23%)	Google (121, 24%)	Google (123, 23%)
2	PubMed (263, 11%)	Google (53, 15%)	VIN (202, 12%)	Merck Vet Manual (55, 11%)	PubMed (51, 9%)
3	VIN (220, 9%)	DEFRA (47, 13%)	PubMed (142, 8%)	BVA (54, 11%)	BVA (50, 9%)
4	Vetstream (153, 6%)	BVA (22, 6%)	Vetstream (135, 8%)	Vetstream (50, 9%)	Vetstream (49, 9%)
5	BVA (143, 6%)	Other (21, 6%)	BSAVA (121, 7%)	NOAH (41, 8%)	Merck Vet Manual (41, 8%)

*Number of respondents to this question (2019 clinicians, 351 non-clinicians, 5 not stated). Clinicians could belong to more than one group if they saw more than one species

†Response rate for this question less than 50 per cent

‡Includes rabbits and exotics

§Includes cattle, sheep and goats

BSAVA, British Small Animal Veterinary Association; BVA, British Veterinary Association; DEFRA, Department for Environment, Food and Rural Affairs; NOAH, National Office of Animal Health; VIN, Veterinary Information Network



FIG 2: Proportion of the UK veterinary profession nominating they read specific sections of the *Veterinary Times* and the *Veterinary Record* publications (n=3825 and n=3444, respectively)

co.uk/Membership-and-benefits/Member-benefits/). These are, therefore, accessible without additional effort required; veterinarians may also be satisfied with the information within these resources. Many of these resources also contain other information, such as news, letters, job advertisements and information about new products. This could be one of the reasons why publications such as the *Veterinary Record* did not feature heavily as those nominated as most useful for the majority of clinicians. Additionally, *In Practice* (nominated as most useful by many, <http://inpractice.bmj.com/site/about/>) often contains narrative reviews or summaries on particular diseases or conditions, which for busy clinicians is advantageous. Ultimately, further work is

required to understand the reasons behind these findings, and the reasons why these resources are being accessed. There are a variety of peer-reviewed and non-peer-reviewed resources being used; the definition of peer review is 'evaluation by one's peers' (Weller 2002). In theory, peer-reviewed resources are significantly more objective and less biased than outputs that have not been through some sort of review process. This potentially has implications for the integration of objective information into practice. Veterinarians should be aware of the strengths and weaknesses relating to the different types of publication, as some may be likely to have a high level of subjectivity or bias associated with them.

For individuals reading scientific papers, most nominated reading the abstract and conclusion primarily, with few respondents reading the materials and methods or results sections. Without reading the methods of how a study has been designed and conducted, it is difficult to determine whether it has been conducted in the most objective and unbiased way. This ultimately affects the certainty around whether the study results should be considered and integrated into clinical decision-making (Vandeweerd and others 2012a). For clinicians, this finding could be as a result of time pressure or a lack of relevant information found in scientific papers. Additionally, individuals may feel that they do not have the skills to adequately judge the quality of research that has been published. The latter point may indicate that veterinary schools and other CPD providers have a place in relation to teaching students and veterinarians how to assess the quality of the evidence. There has been much research conducted in the medical and veterinary field in relation to abstracts displaying serious discrepancies between hypotheses, data and conclusion, and the actual text in the manuscript (Pitkin and others 1999, Chase and others 2006). One way forward may be for summarised reports of evidence relevant to veterinarians to be made available to enhance the use of unbiased research in clinical decision-making. Toews (2011) has previously suggested a point-of-care database that provides easy access to summaries for clinicians to get an overview of the relevant evidence. Initiatives such as BestBETs for Vets (www.bestbetsforvets.org) and Banfield CATs (<http://www.banfield.com/veterinary-professionals/resources/research/cats>) are examples of such resources in the veterinary field. These also have the potential to be used by veterinarians to communicate issues with owners. Other free resources do exist (Murphy 2007, Larson 2010, Buchanan and Wooldridge 2011). Clinicians felt that research findings would be ideally disseminated by emails, which although not possible without a global email database of veterinary clinicians, identifies that perhaps passively receiving research in a digest-type format would be optimal. Researchers have a responsibility to report information in such a way that their target audience can use it effectively; from this

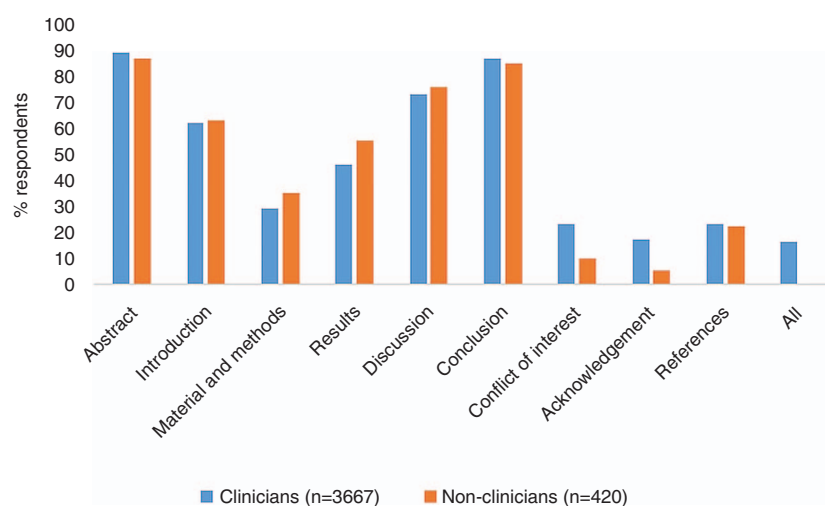


FIG 3: Sections of scientific manuscripts that UK veterinarians nominate that they read (n=4087)

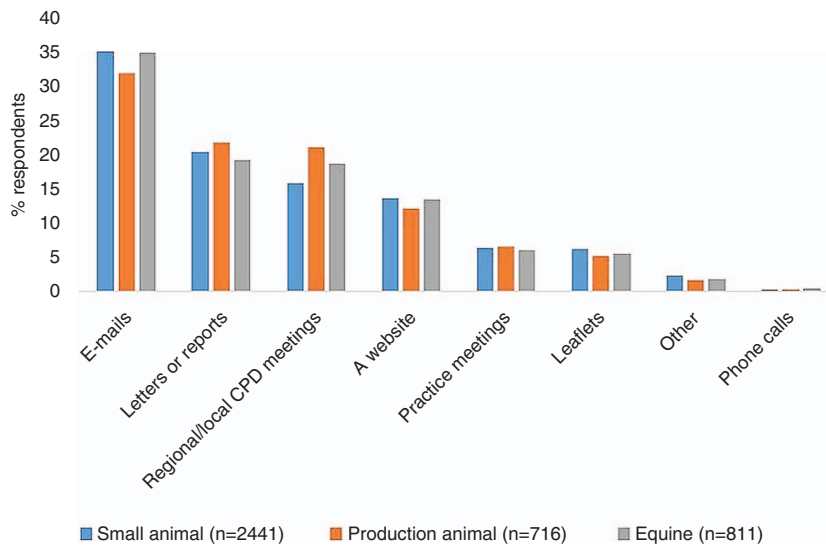


FIG 4: Preferred methods of receiving information from researchers as nominated by different subgroups of veterinary clinicians (n=2955). Respondents could be included in more than one subgroup if they worked with multiple species. Small animal includes rabbits and exotics. Production animal includes cattle, sheep and goats. CPD, continuing professional development

study, this is likely to indicate that there is a need to produce other types of output besides peer-reviewed journals that may not be easily accessible to veterinarians to achieve this. Additionally, publishing in free open access publications is essential; [Nault and Baker \(2011\)](#) reported that only 26 per cent of publications from US and Canadian veterinary schools were available as free open access publications. A number of veterinary journals provide scope for open access publishing, but these come at a cost to researchers.

The Google search engine appears to be a popular electronic resource used by many in the veterinary profession. The way in which Google is used to identify information by veterinarians was not investigated here, but from personal communication with many veterinarians and veterinary students, it is likely to be used for signposting to well-known veterinary specific websites. [Weiner and others \(2011\)](#) reported that first-year veterinary students used Google as their main way of finding resources. When focusing on the electronic sources nominated as the most useful, organisational websites such as the RCVS tended to disappear from the top five, with websites such as VIN, Vetstream and Merck Veterinary Manual becoming more commonly nominated by clinicians. It is not difficult to see why these latter sites are considered useful, as they provide information about disease processes, and provide recommendations on diagnostic and

treatment options. Users of these sites should be aware of the features to look for to assess the quality of the information available. For example, an awareness of the information base used to create these resources and how often they are updated and reviewed would be beneficial. Ideally, users should tend towards those that provide up-to-date information in the most objective way possible. BSAVA appeared as the third most accessed electronic source for production animal clinicians. This is likely to be due to the fact that a proportion of production animal clinicians are in mixed practice, and would be accessing information relevant to small animal topics.

All subgroups of clinicians nominated that they preferred to go to a colleague for advice when they had a difficult clinical case, with textbooks ranked second. [Vandeweerd and others \(2012b\)](#) reported that among a sample of 201 clinicians, 86 per cent used laboratories and 85 per cent used specialists when confronted with a difficult clinical case, whereas only 64 per cent used a colleague; in a German study many preferred to ask colleagues or employers ([Haimerl and others 2012](#)). [Pelzer and Leysen \(1991\)](#) reported that clinicians preferred to consult books when confronted with a difficult (ie, life threatening) case, although only half of the respondents had access to computers when the study was conducted. The fact that veterinarians use

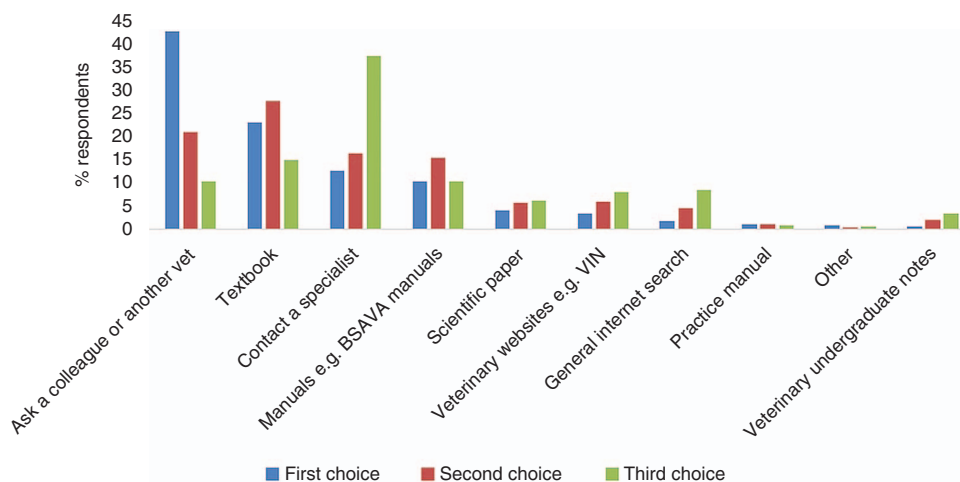


FIG 5: First, second and third choice of information source UK clinicians nominated they used for difficult clinical cases (n=3652). BSAVA, British Small Animal Veterinary Association; VIN, Veterinary Information Network

colleagues instead of peer-reviewed resources might sometimes result in 'outdated' clinical methods being used since it has been reported that clinicians routinely overestimate the value of their experience (Holmes and Ramey 2007), or could give subjective information (Cockcroft and Holmes 2004). Textbooks are also at risk of being out of date even when in the process of being published (Cockcroft and Holmes 2004). It is possible that clinicians use other sources besides peer-reviewed journal articles because they do not perceive them to be relevant to practice (Raw 1987), the results are not being presented in a useable way or due to time or financial limitations for searching for the information.

To the authors' knowledge, there are no other recent national studies of this size published looking into where veterinarians gain information from. Raw (1987) did a national survey of libraries in UK practices, but only included books and journals. Pelzer and Leysen (1991) studied information sources for 272 veterinarians, but this was restricted to 17 states in the USA. The current study gives information on respondents from the different types of practice (eg, small animal, equine, farm animal) as well as non-clinicians, and can potentially lead to improvements in relation to how researchers communicate research findings, and how veterinarians can further integrate evidence into practice. Further work is being undertaken by researchers within the Centre to explore in more detail what and how veterinarians incorporate information into clinical decision-making.

Limitations of the study

No questions were asked to assess the possible access to information for respondents; it is possible that varying levels of access to peer-reviewed journals could have affected the responses in this study. Additionally, this study includes results of resources reported to be accessed by veterinarians, which might differ from what is actually accessed or used. Other limitations in relation to the study design and questionnaire collection have been discussed previously (Nielsen and others 2014).

The response rate for the most useful electronic resource question was less than 50 per cent (this may be due to the question being situated at the very bottom of one page in the questionnaire); therefore, these results need to be interpreted with care. However, with more than 2000 responses for this question, the information is potentially relevant when little else exists. The question regarding what sources of information a clinician would go to if requiring assistance with a difficult clinical case had a large number of answers where instructions were not followed. Data were analysed with and without the incorrect answers, and very similar rankings were found. Again due to the number of respondents, it is likely that the results are valid, but caution should be used.

Conclusion

There are some differences between what information resources are reported to be accessed, and which are deemed the most useful by veterinarians. Veterinary researchers should be aware of these, and target their publishing accordingly in order for the research findings to be disseminated via the most appropriate pathways. Access to peer-reviewed evidence also needs to be prioritised by the profession in order for veterinarians to be able to easily translate evidence into practice; databases of summarised high-quality evidence may be ideal for busy clinicians.

Acknowledgements

The authors wish to thank the veterinarians who participated in the survey and the Centre for Evidence-based Veterinary Medicine (CEVM) team for assistance with manuscript drafts.

► Additional material is published online only. To view, please visit the journal online (<http://dx.doi.org/10.1136/vr.103068>).

Funding The Centre for Evidence-based Veterinary Medicine is supported by an unrestricted grant from The University of Nottingham and Elanco Animal Health.

Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

References

- BUCHANAN, R. A. & WOOLDRIDGE, A. A. (2011) Staying current by searching the veterinary literature. *Journal of Veterinary Medical Education* **38**, 10–15
- CHASE, K. L., DIGIACOMO, R. F. & VAN HOOSIER, G. L. (2006) Biomedical journals: keeping up and reading critically. *Journal of the American Association for Laboratory Animal Science* **45**, 8–15
- COCKCROFT, P. D. & HOLMES, M. A. (2003) *Handbook of evidence-based veterinary medicine*. Oxford, UK: Blackwell Publishing
- COCKCROFT, P. D. & HOLMES, M. A. (2004) Evidence-based veterinary medicine 2. Identifying information needs and finding the evidence. *In Practice* **26**, 96–102
- EVERITT, S. (2008) Applying evidence-based veterinary medicine. *In Practice* **30**, 526–528
- GRINDLAY, D. J. C., BRENNAN, M. L. & DEAN, R. S. (2012) Searching the veterinary literature: a comparison of the coverage of veterinary journals by nine bibliographic databases. *Journal of Veterinary Medical Education* **39**, 404–412
- HAIMERL, P., ARLT, S. & HEUWIESER, W. (2012) Decision making in veterinary practice. *Tierärztliche Praxis Großtiere* **40**, 217–224
- HOLMES, M. A. & RAMEY, D. W. (2007) An introduction to evidence-based veterinary medicine. *Veterinary Clinics of North America: Equine Practice* **23**, 191–200
- LARSON, R. L. (2010) Access to scientific literature in rural veterinary practice. *Online Journal of Rural Research & Policy* **5**, 5
- MURPHY, S. A. (2007) Searching for veterinary evidence: strategies and resources for locating clinical research. *Veterinary Clinics of North America: Small Animal Practice* **37**, 433–445
- NAULT, A. J. & BAKER, H. J. (2011) The Power of Information. *Journal of Veterinary Medical Education* **38**, 3–4
- NIELSEN, T. D., DEAN, R. S., ROBINSON, N. J., MASSEY, A. & BRENNAN, M. L. (2014) Survey of the UK veterinary profession: common species and conditions nominated by veterinarians in practice. *Veterinary Record* **174**, 324
- PELZER, N. L. & LEYSEN, J. M. (1991) Use of information resources by veterinary practitioners. *Bulletin of the Medical Library Association* **79**, 10–16
- PITKIN, R. M., BRANAGAN, M. & BURMEISTER, L. F. (1999) Accuracy of data in abstracts of published research articles. *JAMA* **281**, 1110–1111
- RAW, M. (1987) Survey of libraries in veterinary practice. *The Veterinary Record* **121**, 129–131
- RCORETEAM (2012) R: A language and environment for statistical computing. www.R-project.org (accessed 11 Dec 2014)
- ROBERTSON, S. R. (2007) Refining the clinical question: the first step in evidence-based veterinary medicine. *Veterinary Clinics of North America: Small Animal Practice* **37**, 419–431
- ROSE, K. (2014) Social media management. www.rosemcgrory.co.uk/2014/01/06/uk-social-media-statistics-for-2014/ (accessed 11 Dec 2014)
- TOEWS, L. (2011) The information infrastructure that supports evidence-based veterinary medicine: a comparison with human medicine. *Journal of Veterinary Medical Education* **38**, 123–134
- VANDEWEERD, J. M., KIRSCHVINK, N., CLEGG, P., VANDENPUT, S., GUSTIN, P. & SAEGERMAN, C. (2012a) Is evidence-based medicine so evident in veterinary research and practice? History, obstacles and perspectives. *The Veterinary Journal* **191**, 28–34
- VANDEWEERD, J. M., VANDEWEERD, S., GUSTIN, C., KEESEMAECKER, G., CAMBIER, C., CLEGG, P., SAEGERMAN, C., REDA, A., PERRENOUD, P. & GUSTIN, P. (2012b) Understanding veterinary practitioners' decision-making process: implications for veterinary medical education. *Journal of Veterinary Medical Education* **39**, 142–151
- WALES, T. (2000) Practice makes perfect? Vets' information seeking behaviour and information use explored. *Aslib Proceedings*. MCB UP Ltd. pp 235–246
- WEINER, S. A., STEPHENS, G. & NOUR, A. Y. M. (2011) Information-seeking behaviors of first-semester veterinary students: a preliminary report. *Journal of Veterinary Medical Education* **38**, 21–32
- WELLER, A. C. (2002) Editorial peer review: its strengths and weaknesses. New Jersey: Information Today Inc.
- WHITE, M. E. (1989) What information explosion? *The Canadian Veterinary Journal* **30**, 626–628



CrossMark