Review Article

Searching for veterinary evidence: A guide for equine professionals

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Summary

There is more and more online information available at our fingertips, but how do we efficiently identify and extract relevant information for good clinical decision making? The aim of this review article is to provide equine professionals with the building blocks to be able to develop skills for expertly navigating the scientific literature in a timely fashion. This includes what key questions you need to ask before starting (why am I searching and how much time do I have), where the best places are to search and how to find freely available legal copies of papers (articles, conference proceedings, book chapters and dissertations). Additionally, how to best conduct an information search and what you get from searches of varying comprehensiveness. Finally, this article will cover where to find databases of research syntheses where others have already carried out the hard work for you and some advanced techniques which are likely to save you substantial amounts of time. This article draws together expertise from a panel of veterinary clinicians, nurses and technicians, information specialists and librarians and clinical researchers.

Managing the information firehose

Searching for literature is a science on its own (Williams, 2010), and it can be difficult to keep up by primarily relying on journal subscriptions and web resources. Additionally, information comes in a variety of different formats which can make reading, interpreting and comparing information challenging at times (Jones, 2013). This means utilising targeted strategies and developing search skills tailored to your need for information. A pragmatic strategic approach is required and if employed, veterinary professionals can be selective about what they read without fear of missing something important (Jones, 2013). This article will outline efficient search strategies to improve locating and keeping up with the information you need for your clinical decision making. This is aligned with the needs listed below and may differ from comprehensive searching performed in systematic or scoping reviews that can take 6 months or more to complete (Borah et al., 2017).

Why am I looking and how much time do I have?

There are many reasons you will be looking for information in the literature. It is useful to begin by considering **_why_** you are

searching before embarking on your quest (Cockcroft & Holmes, 2008), to make sure you are as efficient as possible with your efforts. Why you are searching will guide both **_where_** you search and **_how_** you search. The main reasons as to why you might search in human medicine (Greenhalgh, 2000, 2019), parallel those of the veterinary team. These can be more targeted for our veterinary needs:

1. Obtain general information about a well-defined topic or area
2. Answer a very specific clinical question that has arisen from a case or a question from an owner
3. Find the full text of a particular paper
4. Identify an existing research synthesis/structured review (termed secondary sources of evidence) on a specific clinical question

The scope of this article is to support your skills related primarily to the four reasons listed above. In addition to your reason for a search, the time and resources available to you can vary (Pinchbeck & Archer, 2020). This will dictate how comprehensive your search can be. Busy professionals have to balance the uncertainties of time available with confidence in the information (**Fig 1**). A more in-depth search will be ideal for some situations, and a quick search using solid skills can often provide a good yield for clinical settings.

Where can I look?

You would think finding great, applicable, reliable veterinary information would become easier, rather than harder, in this 'information age', but this is not necessarily the case. There are many different resources or 'places' to look for information, which range from the literature databases like Medline (PubMed) where you can search for journal articles through to search engines like Google (or Google Scholar). Further information as to the different resources you can use and what they are can be found in **Table 1**. However, each of these resources index only a fraction of veterinary journals (Grindlay et al., 2012). There is overlap and each has unique content, so it is worth thinking about what you are looking for and tailoring your efforts accordingly.

Think of information resources – internet search engines, literature databases, indexes or wherever you look – as though each is a filing cabinet. Each has some information
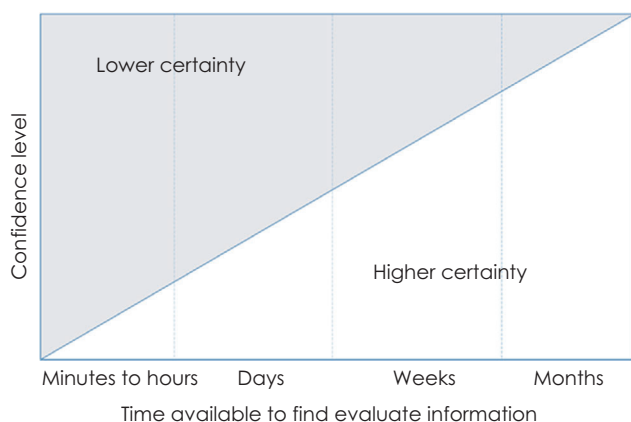
Fig 1: Balance between time and confidence: The more time-comprehensive the search, the more certain you can be with your evaluation of the results. Adapted from ECDC (2011).

you want, and some you do not want. Some people have access to more filing cabinets than other people. It is free to open some and others require payment to open. Some content is in more than one filing cabinet, but none have *exactly* the same information. Some are better organised than others. Some use standard labels for the contents, others do not. They mostly have abstracts and not the full paper.

Often, they signpost to the full paper; however, it may not be in the same filing cabinet. Sometimes the full paper is free and sometimes payment is required.

Examples of useful resources for clinical practice are in **Table 1**. This list is not exhaustive. It includes those that yield the most relevant information for equine veterinary professionals. The great news is the same solid search approach can improve your results in all of them. We will discuss each of these databases in more detail now.

PubMed/MEDLINE

PubMed is a freely available way to search the MEDLINE index. MEDLINE covers the broad biomedical sciences including a core of veterinary journals. It is not designed to be a veterinary index. It was completely redesigned in 2020 and is optimised for non-expert searchers. This means that PubMed will 'predict' what you are looking for and add synonyms, plurals and alternate spellings to help find papers about your topic. As an example, when you search 'equine' it searches for the subject 'horses' and the keywords 'horses' or 'equine'. PubMed lets you quickly filter results by year, language and free text access. PubMed includes most of the core list of veterinary medical journals and equine articles in them; unfortunately, some publications of interest to equine practitioners are not included, such as Equine Veterinary Education, In Practice and Veterinary Evidence.

TABLE 1: List of useful resources that could be utilised in clinical practice to find information

Database	Subject	Has some links to free full text	Reproducible results	Cost	Equine conference proceedings included
PubMed (includes all MEDLINE)	Biomedical sciences	Yes, and institution journal subscriptions	Yes	Free	No
CAB Abstracts	Applied life sciences	Institution journal subscriptions	Yes	Subscription for individuals, practices or institutions. Day, month or annual subscriptions. CAB Direct interface for individuals; many interfaces for institutions	Yes
VetMed Resource (includes content from CAB Abstracts)	Veterinary information from CAB Abstracts	Yes, and institution journal subscriptions	Yes	Subscription for individuals, practices, or institutions. Day, month, or annual subscriptions. May be included with some veterinary association memberships	Yes
VIN: Veterinary Information Network	Veterinary	Yes	Yes	Subscription for individuals or practices Annual	Yes
IVIS: International Veterinary Information Service	Veterinary	Yes	Yes	Free for those working with veterinary medicine. Requires setting up account.	Yes
Vetlexicon	Equis, Bovis, Canis, Exotis, Felis, Lapis,	Yes	Yes	Subscription for individuals, practices or institutions Monthly or annual May be included with some veterinary association memberships	Yes
Google Scholar	All subjects	Yes, and institution journal subscriptions	No	Free	Yes

CAB Abstracts/VetMed Resource

The CAB Abstracts index has the most inclusive coverage of veterinary literature, including many international journals and conference proceedings. It includes publications of interest that are not in PubMed. VetMed Resource is the subset of CAB Abstracts focussed on veterinary medicine. Depending on the topic, searching here will yield more results than a similar search in other resources. Results include peer-reviewed articles and conference proceedings, book chapters, reports and other types of information. Results can be filtered by many fields including year, language, subject and species, and there is also an evidence filter which is designed to retrieve secondary synthesis literature (see point 4 later in this article).

Veterinary Information Network

This is a subscription-based veterinarian-only service that includes a number of resources – a journal database, message boards, drug formularies, conference proceedings, news and its own online textbooks. Much of the content is geared towards companion animal practitioners. The journal database includes publications of interest that are not in PubMed. Veterinary Information Network (VIN) results can be filtered by year, species and free text access.

International Veterinary Information Service

This is a free service for veterinarians, nurses, students and librarians that includes full-text conference proceedings, online textbooks and journals, continuing education calendar listings and online learning. It requires setting up a free account.

Vetlexicon

Vetlexicon from VetStream is a subscription-based point-of-care tool which provides peer-reviewed text and multimedia content about diseases, drugs, diagnostic and surgical techniques. Vetlexicon has specific resources for individual species: Bovis, Canis, Equis, Exotis, Felis and Lapis and provides links out to preconstructed searches on PubMed and VetMed Resource.

Google Scholar

Google Scholar is a specialised portion of Google that does not index specific journals, but looks for results that are articles, conference proceedings, chapters and dissertations. A search in Google Scholar generally provides you with one of two things: the best results you can imagine, or the worst results you have ever seen. We recommend that it is never the *only* place you search. It is very helpful for finding freely available copies of papers. The search options are limited so it can be difficult to focus your search leading to overwhelming results. You can do an advanced search and it has a few results filters. Individual authors may have Google Scholar profiles that let you see a list of their publications and links.

The basics of any search, large or small and in any resource

Regardless of the time or resources available, a thoughtful search should find more wheat than chaff. A great framework to help you is PICO or SPI illustrated in **Box 1**. You will need search terms (terms that represent what you are

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Box 1 PICO and 'SPI' searches

The standard technique for constructing a good search of the medical literature is the 'PICO' framework. Including terms that cover the patient/condition, intervention, comparison, and outcome, ensures that you find the papers which may answer a clinical question. 'Intervention' can be any treatment, diagnostic test, or risk factor you might be interested in.

P	I	C	O
Patient & condition	'Intervention' • Treatment • Diagnostic test • Risk factor	'Comparator' • Alternative Treatment • Alternative diagnostic test • Absence of risk factor	Outcome

In veterinary medicine, the patient must also be identified by species and other terms are often omitted: Because many studies don't have a comparison group, C is frequently omitted from searches. Since not all papers specify the outcomes, O is also often omitted. Thus we may often perform a 'SPI' search which simply asks about the patient (species and condition) and the intervention we're interested in.

S	P	I
Species of patient	Further details of patient & condition	Intervention • Treatment • Diagnostic test • Risk factor

| Search aim	Species of patient	Patient condition	Intervention	Comparator
Background search	Horses	Gastric ulcers		
Clinical question (single treatment)	Horses	Gastric ulcers	Omeprazole	
Clinical question (compare treatments)	Horses	Gastric ulcers	Omeprazole	Misoprostol
Clinical question (diagnosis)	Horses	Gastric ulcers	Gastroscopy or 'diagnosis'	Optional
Clinical question (risk factors)	Horses	Gastric ulcers	Stress or 'risk'	Optional

Box 1: PICO and 'SPI' searches.

When you search, you are often looking for articles that include all of the concepts you are interested in. Boolean operators are the words 'AND', 'OR' (and sometimes 'NOT').

Imagine you are searching for traditional pizza recipes. You want one that includes tomato sauce, mozzarella cheese, and pizza dough. You have chosen these ingredients and do not want any other sauce, cheese or dough.

Pizza dough

Mozzarella cheese

Tomato sauce

If you combine these using 'OR', you will find recipes that use any of these ingredients because OR functions like 'either or'. The recipes you find could include one, two or all three ingredients.

Pizza dough

Tomato sauce

Mozzarella cheese
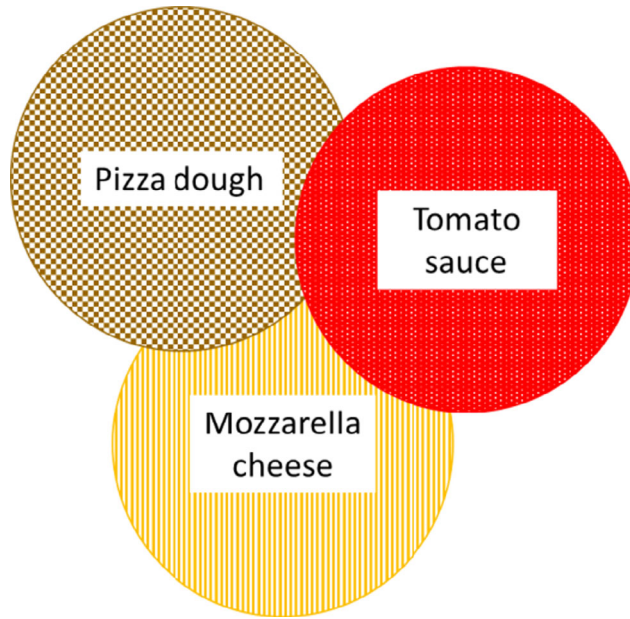
If you combine the terms with 'AND', you will find recipes that only include all three ingredients – and voila, the recipes you were really after are now at your fingertips.

Pizza dough

Tomato sauce

Mozzarella cheese
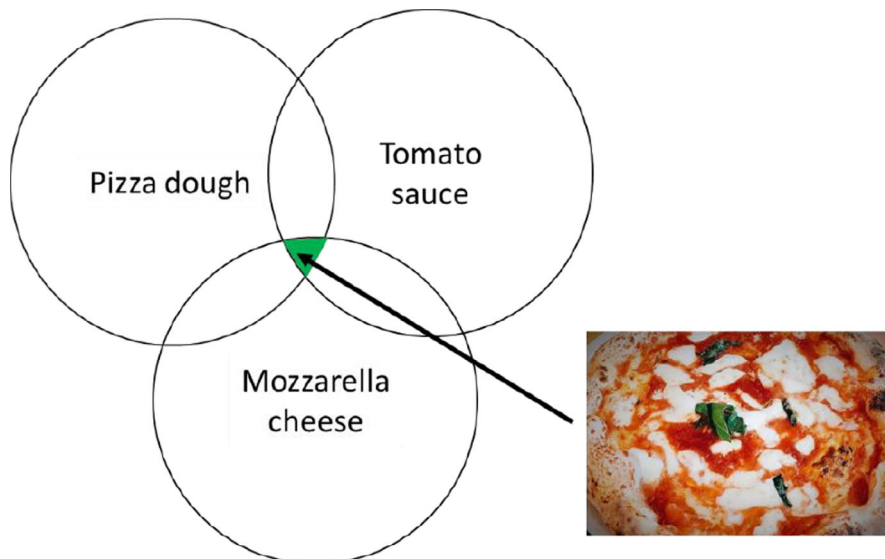
Box 2: Using Boolean operators.

looking for) for your patient and condition. If you are interested in a specific therapy, diagnostic test or risk factor, you may want to add terms(s) describing them also, or even your outcome. Some examples are given in relation to searching for information about gastric ulcers in horses in **Box 1**.

Once you think of search terms or keywords that describe the concepts you need, it is essential that they be combined sensibly to get the results you want using **'AND'** and sometimes **'OR'** (called Boolean operators – **Box 2**). This is a step that many searchers miss but can save you loads of time by rapidly reducing the number of irrelevant citations and increasing the relevance of the citations returned.

If you want papers that contain <u>all</u> the terms you're looking for, use **AND** to combine them; by using **AND**, a paper must include all of those terms to be included in your search results. For example, if you are interested in tarsal arthritis in horses, you want papers relating only to horse hocks, not human ankles so you would combine terms for hock arthritis with terms for horse using **AND** (species and condition are always combined with AND, for example, see horse **AND** gastric ulcers in the worked search example later on in **Table 2**).

Most resources, including PubMed and VetMed Resource automatically insert **AND** between your terms so you do not have to think about it. In some systems, including Google Scholar and VIN, you must tell the search engine to use **AND** by selecting 'match <u>all</u> terms'. Seek the 'advanced' or 'detailed' search option in the resource you are searching to discover the options.

Often there are different terms for the same thing, in which case you may combine synonyms with **'OR'**. For example, horse could be described as horse OR horses OR equine. You may also use **OR** for either of several treatments of interest. **OR** tells the search programming that you'll accept 'either this or that'; for instance hock **OR** tarsus would return papers which used either term. In some systems, including Google Scholar and VIN, you must tell it to use **OR** by selecting 'match <u>any</u> terms'.

The logic of the **AND** and **OR** work the same in all the resources and is called Boolean searching. What changes is <u>*how*</u> you combine the terms. Sometimes you need to type **AND** in your search. Sometimes you choose 'match <u>all</u> terms' in a form. Sometimes you select **AND** from a dropdown box in a form. Look in the help area of any of the resources you are using to find out more. Check out **Box 2** for further explanation.

While these skills apply to any search, for the remainder of this article, we will use the four reasons for searching we mentioned at the start as a framework with some practical examples to demonstrate some of the concepts and resources we have discussed.

We have tried to use a variety of scenarios for our 4 reasons for searching using a couple of the resources listed above to demonstrate how to navigate the different systems. This is not exhaustive but hopefully shows a spectrum of ways to get to the information you are looking for.

Obtaining general information about a topic

You recently took over a greater equine caseload in your mixed practice and realise it has been some time since you updated yourself on equine gastric ulcers. You would like to get the most up-to-date and accessible information on aetiologies, diagnosis, classification and treatment. You do not have much time so you decide to search PubMed as you can enter a simple search and it matches, or maps, to additional terms using a process called Automated Term Mapping. You type **horse gastric ulcers** in the search box and retrieve 288 results. PubMed is actually searching for horse **AND** gastric **AND** ulcers and plurals and synonyms for these terms. You can see what it actually searched by clicking on 'Advanced' underneath the search box and scrolling down the page to look at the search details.

You decide you want to see if PubMed links to a free full-text review article (see also the section later in this article about additional ways to find free full-text papers). On the left-hand side of the results are choices to limit your results. Under 'Text Availability', you click 'Free full text' and under

TABLE 2: Evidence searches* relating to 'equine gastric ulcers' with and without synonyms in the various resources available to veterinary professionals

	Species	Condition	PubMed results	VetMed Resource results	Google Scholar results	VIN results	VetStream results
Search with some synonyms	Horse Horses Equine Equus	Gastric ulcers Stomach ulcers Gastritis Gastric disease Peptic ulcers	747	1007	Not designed for user to easily choose their own synonyms	Not designed for user to easily choose their own synonyms	Does not have an article database per se. Organised in one overall factsheet with information and links to literature search
Search with no synonyms	Horse	Gastric ulcers	288	719	26,500	1999	
Can you filter results?	N/A	N/A	Yes	Yes	Limited	Yes	Yes

* The number of results obtained by readers executing searches today compared with the numbers listed here (searched 29 October 2021) may differ, as more papers are added each day to these databases (i.e. more files are added to the filing cabinet over time).

'Article type' you click 'Review' and limit your search to the preceding 20 years – one appears particularly relevant: 'European College of Equine Internal Medicine Consensus Statement – Equine Gastric Ulcer Syndrome in Adult Horses' from 2015 (Sykes et al., 2015). A word of caution, when you do your next search, the filters stay on until you take them off.

The same search terms, **horse gastric ulcers**, can be used in the other resources. In VetMed Resource, the same search terms retrieve 613 citations when limiting to 'Journal articles'. In VIN, the same search terms retrieve 370 articles (using 'Match all terms' and limiting to 'Journals'). The results from these contain some of the same items from PubMed and some different ones; remember the filing cabinet metaphor we used earlier. Vetlexicon Equis is not an article database and therefore retrieves one multifaceted entry for veterinarians, a list of further readings and links to preconstructed searches in PubMed and VetMed Resource. Google Scholar searches anything it can find so the same search terms yield 26,500 results. That is a lot of results and they become less relevant quickly as you move beyond the first few pages.

As an overview for this particular search across the databases, see **Table 2**.

Answering a specific clinical question

A client who is active on a Facebook group about equine show jumping mentions she has heard there is a 'new' drug superior to omeprazole for treatment of stomach ulcers; she asks for your opinion. You gather she is referring to misoprostol. You have heard some discussion about this recently and want to review it in more detail before telling her what you think, particularly since the ECEIM consensus paper you reviewed did not cover this topic. You think investigating this question would be really useful for the practice as a whole, so you dedicate some time to it.

You can use PubMed and combine **horse gastric ulcer** with treatment choices for your search: **horse gastric ulcer omeprazole misoprostol**. PubMed generates four results, one is a recent clinical trial specific to glandular (versus squamous) gastric ulcer disease, but it is not freely available unless you are a BEVA member (Varley et al., 2019). The PubMed record for the Varley clinical trial article also shows citing articles. A citing article is an article that references the original article in question (in this case, Varley et al., 2019) and can often contain similar content to the original. The citing article by Banse and Andrews (2019) has a link to the free online copy. Locating and following citing articles can lead you to newer and additional information, and it can lead you to freely available articles. In this case, Banse and Andrews (2019) is a recent review that interprets the results of Varley et al. (2019), suggesting misoprostol is superior to omeprazole in healing lesions in glandular gastric disease (Banse & Andrews, 2019). Knowing the trial appeared to focus on glandular disease, it may not be relevant to a patient with squamous disease, but you would still like to read it as review articles can provide great background and additional references to follow. However, it is important to be mindful of the difference in the information you get from a systematic review compared with a narrative review. This is explained in more detail in Section 4 below. You can also use Google Scholar to find freely available copies of a specific paper and to find citing papers. In this case, Google Scholar shows that the citing papers for Varley et al. (2019) include Banse and Andrews (2019).

If you have access to VIN, the **horse gastric ulcer omeprazole misoprostol** search returns 83 references (if you 'match _all_ terms'), including the Varley et al. (2019) clinical trial which is not freely available. However, 15 papers are freely available to read, including Banse and Andrews (2019).

Do not be afraid to play around with your terms if you are not getting what you need returning from your search. You may need to pull back from locking your terms in too 'tightly' if this happens as the different resources will index articles differently. For example, in VetMed Resource, in order to find both Varley et al. (2019) and Banse and Andrews (2019), you would need to remove the term 'ulcers' because both articles are about gastric glandular disease.

Finding a particular paper

If you know the details of a specific paper you want to look for, jump to the section about finding freely available full-text papers.

There are times when you almost know the citation for a specific paper. You have an information 'stub' in your clinical brain – as in 'I know X talked about a study at last year's CPD course', 'I read something about that last year in Y journal,' 'Dr Brown published something on this topic' or 'I saw it on an email discussion list'. Depending on the 'stub' content, you can use the strategies above if you remember the patient and condition and maybe the intervention. Alternatively, you can look at references in a related paper to see if you recognise any as being the one at the tip of your tongue. If you know at least one author name, they may have a profile in Google Scholar or ResearchGate (https://www. researchgate.net). These sites are researcher social networks which can list their publications, sometimes include full-text or link to it, and provide other information about the person. As an example, none of the searches above easily found a more recent review by the lead author Ben Sykes on the ECEIM Consensus. His ResearchGate profile and Google Scholar Profile include a 2018 article published in EVE which provides a good overview on the use of proton pump inhibitors in gastric ulcer disease (Sykes, 2019). An additional advantage of Google Scholar is you can also find newer papers that cite a paper. If you search for the ECEIM consensus paper by looking for its title, then click the 'cited by' link in the result, you get more than 150 papers that cite the ECEIM paper, some of which may be useful.

Structured searches and evidence syntheses carried out by others: 'Secondary sources' of evidence

A great way to find the 'bottom line' answer to a clinical question is to look for a resource where the evidence has already been summarised for you (termed 'evidence syntheses', or 'research syntheses' or 'structured review'). In these, a specific methodology has been used to conduct a literature search and for most types of review, all relevant papers have undergone a critical appraisal. There are a range of different types of structured review that can be undertaken, from critically appraised topics (CATs) through to systematic reviews which differ in time taken to produce and methods used (see **Fig 1** in Brennan et al. [2020] for more details). It is worth making a note of when a review was last updated as new papers are published every day that could significantly alter the conclusions drawn; evidence syntheses ideally should be updated periodically. You can locate these secondary sources in several ways (Kerbyson, (2015); **Table 3**):

TABLE 3: List of evidence syntheses or secondary sources that are accessible to equine veterinary practitioners

Within a literature search	PubMed, VetMed Resource and others	Look in results for these publication types or look for a results filter. PubMed has systematic review filter. VetMed Resource has an Evidence-based research filter.
VetSRev	https://vetsrev.nottingham.ac.uk/	Database of the available veterinary relevant systematic reviews
Professional bodies	BEVA, ECEIM, ACVIM and others	Periodically produce evidence summaries in guidelines or consensus documents
Veterinary Evidence journal (Knowledge Summaries)	https://www.veterinaryevidence.org also listed in CAB Abstracts, VetMed Resource, and VetStream	Knowledge Summaries
Equine Veterinary Education	https://beva.onlinelibrary.wiley.com/hub/journal/20423292/homepage/critically_appraised_topics_for_clinical_evidence_in_equine_practice.html also listed in CAB Abstracts and PubMed https://onlinelibrary.wiley.com/page/journal/20423306/homepage/clinical_evidence_in_equine_practice_online_collection.htm	Critically appraised topics Clinical evidence in equine practice section
BestBETs for Vets	www.bestbetsforvets.org also linked in VIN and VetStream. A selection of these is also published in the Veterinary Record journal, and will therefore be listed in CAB Abstracts, VetMed Resource and PubMed	Summaries of clinical evidence; browsable by species, topic area and intervention
Veterinary Prescriber	https://www.veterinaryprescriber.org/	Produce modules of information on specific topics; subscription-based
In Focus	https://www.infocusvj.org	Current awareness tool providing narrative reviews of articles

If you are interested in getting more involved in improving the knowledge base for the profession or conducting a structured review as part of further training, as a starting point you can look for further information provided by the various sources in **Table 3**. If you choose to do this, one option is a Knowledge Summary through the Veterinary Evidence journal. If you undertake this, you get support from the RCVS Knowledge Library and there is self-guided help from EBVM Learning (www.ebvmlearning.org). If you are affiliated with an academic institution or the RCVS Knowledge Library, consult your information specialists or librarians for assistance with choosing resources, structuring your search and organising your references. Another option is to look at the searches that have been used in other publications as a starting point for your own synthesis. Comprehensive searches, like those used in research syntheses, often have long lists of search terms, which may look complex at first glance, but on further examination, are using synonyms for each term to increase the likelihood of all possible results being found (for more information revisit the 'The basics of any search, large or small, and in any resource' section and **Box 3**).

There are also a number of research syntheses at the article and critically appraised topic level that you can hear via podcast during your commute or workout. These podcasts, ranging from those that summarise articles in three minutes to those that are longer discussions about articles with their authors, are available from veterinary journals including Equine Veterinary Education, Veterinary Evidence, InFocus and Equine Veterinary Journal.

Getting full-text access

The gap between access to the literature between individual and institutional level appears to be narrowing. A recent study suggested as much as 62% of the veterinary literature is available online freely via several avenues (Page, 2018). One is that authors upload their paper for others to read free of charge; this might be their submitted version, their accepted manuscript or the publisher's final version. Additionally, there are articles freely available because either the whole journal or specific articles in a journal are freely available to read online. However, as many articles still require payment to read, this section outlines methods to acquire full-text articles. It is important to remember nothing is free, you expend time or disclose personal information in trade for some papers instead of money. Fortunately, there are some good options to help you find full text:

A good example of a structured search is from a systematic review looking at the use of furosemide for exercise-induced pulmonary haemorrhage in racehorses (Sullivan et al., 2015). The search string was (horse OR equine OR Thoroughbred OR Standardbred) AND (exercise-induced pulmonary haemorrhage OR exercise-induced pulmonary hemorrhage) AND (frusemide OR furosemide).

Species synonyms	Condition synonyms	Intervention synonyms
Horse Equine Thoroughbred Standardbred	Exercise-induced pulmonary haemorrhage Exercise-induced pulmonary hemorrhage	Frusemide Furosemide

Box 3: Structured search example.

1   What access do you have?

What libraries, resources and journals do you have access to? Do you live near a university that allows non-affiliated people to use the resources freely or at a reasonable cost? Do you travel near one?

Example 1: Consider membership in a library. Membership to the RCVS Knowledge Library provides access to key journals and VetMed Resource. The fee varies depending on whether you are a member or associate of the RCVS or not. For more information see: https://knowledge.rcvs.org.uk/library-and-information-services/join-the-library/

Example 2: Many US and UK public libraries subscribe to online resource packages that provide online journals and may include veterinary titles. These vary so check with your local library. Remote online access may be included with your library card. Do you live near a university? You may be able to visit in person and use their search database, online journals and print journals; many will have some veterinary and medical content even if they do not have a medical or veterinary school.

Example 3: What resources does, or could, your practice group subscribe to? Many have tiered pricing based on the practice size.

Example 4: What resources does, or could, your veterinary association membership include? These benefits change so check in on the current offerings; there are discounts available through a number of veterinary associations. Memberships are member organisations. If something is important to you, ask if it can be included as a low-cost or no-cost benefit.

2   Tools and techniques to find freely available paper copies

The key to finding freely available copies of papers is to stay on the right side of the law in your jurisdiction. The following section highlights some great sites and techniques to consider when you know the paper you are looking for. Use other portions of this article to search for papers about your topic.

The first to consider is links within the resources we highlight in this article because many include direct links from them to freely available paper copies. You can reverse engineer this. Copy the title of the paper you want to find. Search for it in the resource to find the record. See if there is a link to the freely available full text.

•   Google Scholar https://scholar.google.co.uk or https://scholar.google.com or appropriate link for your country

Enter the title of the paper in quotes " " as your search. Google Scholar will search for that paper and the result links to all the versions it can find. If the paper title is correct, the result should be one item, your paper. Click the 'All # versions' in the last line of the citation to see all the places Google Scholar can see it and links to freely available full text. Links to freely available full-text articles uploaded at ResearchGate (https://www.

researchgate.net/) and Semantic Scholar (https://www.semanticscholar.org) are generally included in the Google Scholar results and can also be searched separately at their respective sites.

•   Open Access Button https://openaccessbutton.org/

When you know a specific paper you want, enter what you know about it at this website. It will try to find you a freely available full-text copy. You can search just a title, a paper citation, a URL or DOI or a unique record number from PubMed (PMID) or PubMed Central (PMCID).

For other advanced techniques for easily accessing freely available copies of papers, please see **Box 4**.

Want more information about searching?

There are a range of really good additional resources available to find more information about how to search efficiently. Many of these websites and papers are freely available (**Table 4**).

Conclusion

To be able to successfully keep up to date with the latest veterinary literature, veterinary professionals will need to move from a passive system of information coming to them, to more actively searching for the information that they require. Taking the time to learn how to create a structured search in the appropriate places should yield an easy and efficient path to retrieving relevant clinical information. There are lots of resources that can be used to help you to gain

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Browser Buttons:

Browser Buttons are free computer programs that you can install on your computer. Their goal is one-click access to freely available copies of articles. These sit on the top right side of your internet browser. Browser button programs to look at are Unpaywall, Open Access Button, Lazy Scholar and Endnote Click/Kopernio. If you are at a university, ask your librarians how to link to your university subscriptions. Like any executable program, you need to look at the terms and conditions.

Linking services that universities may have access to are Lean Library and LibKey.

Links from within databases:

PubMed has a free full-text filter for the result set so you can know right away what you can access free. It also has links at the article level record. Dimensions (https://www.dimensions.ai/) and Lens (https://www.lens.org/) and Microsoft Academic (https://academic.microsoft.com/home) are free databases you can search, and they also have links to full-text articles. Microsoft Academic is scheduled to cease updates of new information on 31 December 2021.

Box 4:   Advanced techniques for accessing evidence.

TABLE 4: Further resources relating to how to search for information

EBVM Learning – 'Acquire' section www.ebvmlearning.org/acquire

EBVM Learning for Practitioners – https://ebvmlearningpractitioners.org/

RCVS Knowledge EBVM Toolkit – Searching and critically appraising: https://knowledge.rcvs.org.uk/evidence-based-veterinary-medicine/ebvm-toolkit/#finding

Brennan, ML, Arlt, SP, Belshaw, Z, Buckley, L, Corah, L, Doit, H, Fajt, VR, Grindlay, DJC, Moberly, HK, Morrow, LD, Stavisky, J and White, C (2020) Critically Appraised Topics (CATs) in Veterinary Medicine: Applying evidence in clinical practice. *Frontiers in Veterinary Science* **7**, 314, https://doi.org/10.3389/fvets.2020.00314

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these skills to make the process of searching for information part of everyday clinical practice. Remember that just like any other veterinary skill that you have mastered along your professional journey, learning to search efficiently is the same and will require some application and a bit of persistence and determination.

Authors' declarations of interest

H.K. Moberly is a member of the CABI Publishing North American Library Advisory Board and the VetStream Academic Advisory Board. C. Boulton and S.M. Everitt work for RCVS Knowledge. M.L. Brennan is a member of the Quality Improvement Advisory Board for RCVS Knowledge and received honorarium payment from RCVS Knowledge to speak at their 2015 conference. M.L. Brennan is also Director of the Centre for Evidence-based Veterinary Medicine at the University of Nottingham. H.K. Moberly, C. Boulton and M.L. Brennan have been involved in the creation of the EBVM Learning online tutorial which has been supported and is currently hosted by RCVS Knowledge.

Ethical animal research

Not required for this review article.

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Authorship

All authors have been involved in the conception and design of the paper and the drafting of the paper. All authors have approved the final version submitted for the publication.

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