The Global Resource for Online Evidence-Based Veterinary Medicine Learning: a collaborative, open access learning tool.

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Introduction:

Evidence-based Veterinary Medicine (EBVM) "is the use of best available scientific evidence, in conjunction with clinical expertise and consideration of owner and patient factors, to make the best clinical decisions for patients" (1) developed following the principles of Evidence-Based Medicine (EBM). The first EBVM book, *Handbook of Evidence-based Veterinary Medicine* by Cockcroft and Holmes was published in 2003. EBVM, however, is less widely used than EBM. This is due to several factors. While a medical practitioner has a relationship with a patient, in veterinary medicine this is a veterinarian-client-patient relationship. There are differences with funding and insurance models in veterinary medicine, for example, with veterinary practices being privately owned, rather than centrally managed as human healthcare is in many countries. Treatment options may depend on whether or not a patient is insured. In veterinary medicine there is less published clinical evidence than in human healthcare (2) and there is an awareness that more investment in veterinary clinical research is needed (3). Due to these, and other factors, EBVM is different to EBM.

EBVM is, however, developing, with many veterinarians recognising that EBVM can assist them reach better clinical decisions and therefore improve patient care. Several national and international organisations have been established. The Evidenced-Based Veterinary Medicine Association (EBVMA) in North America was established in 2004; the Centre for Evidence-based Veterinary Medicine (CEVM) at the University of Nottingham in the UK was established in 2009 and the Royal College of Veterinary Surgeons (RCVS) Knowledge engaged the veterinary profession in the UK in 2013 with representatives of all UK veterinary schools meeting to discuss current practice and possible future developments in teaching EBVM. The EBVM Network was established by the RCVS and the 1st International EBVM Network Conference was held in October 2014 in the UK.

Evidence-based Veterinary Medicine Learning Consortium (EBVM Learning Consortium)

Kristen Reyher, from the University of Bristol, and Rachel Dean and Marnie Brennan from the University of Nottingham felt there was an opportunity to build on the work of the EBVM Network and led a project to build a free online EBVM tutorial for veterinarians. They contacted national and international colleagues and invited them to participate in this project. The EBVM Learning Consortium was established with the aim of helping direct the uptake of EBVM in the veterinary profession. It is an international team of academics, clinicians, researchers, experts in many areas of the veterinary profession and information specialists, with members from universities in the UK, Germany, Romania and Canada

In January 2015 the EBVM Consortium submitted an application for an RCVS Target Grant for a project to produce an open access series of online, re-usable learning objects (videos, quizzes, case-studies, exercises, worked examples) presented as a coherent web tutorial with a number of modules teaching the fundamental concepts of EBVM. The project application stated that the resulting resource would be available as a stand-alone tutorial for independent learning and would also have the flexibility for institutions to re-use and re-purpose individual parts to meet their own training needs. The tutorial was intended to be a base of knowledge bringing together the basics of EBVM into one place, and highlighting links to other relevant resources and organisations available to further learners' knowledge about the subject. It was envisaged that the tutorial would increase the opportunities for students and members of the veterinary profession to engage in EBVM and would help ensure the topic is introduced well and adopted wholeheartedly by the profession. The project leads were informed in March 2015 that the application was successful and work began that month.

Development of the open access online tutorial
The initial project meeting for the 'Global Resource for Online Evidence-Based Veterinary Medicine Learning' project was held on 19 March 2015 in Bristol, with members attending either in person or via Skype. It was agreed that the resource would begin with an introductory chapter 'the ABCs of EBVM' introducing the principles of EBVM, and would then be organised into modules addressing the five key areas of EBVM (based on the EBM five-step model (4)):

1. Ask – defining a clinical question that is of interest and (hopefully) answerable
2. Acquire – finding the best evidence to answer the question
3. Appraise – assessing the quality of the relevant evidence found
4. Apply – implementing the evidence into clinical practice where appropriate
5. Assess – evaluating the impact of the implementation and changes in clinical practice

This meeting established the chapter leads and working groups for the different chapters.
The project leads developed a chapter template, to ensure consistency across the chapters as these were being written by different teams. It was agreed that each chapter would include an introduction with learning objectives, chapter content, a quiz, a summary of the chapter and a list of references and useful links. Documents were shared using Dropbox. Chapter teams were supplied with guidance on writing learning objectives and multiple choice questions. An online discussion and 'question and answer session' was held in April 2015 for the chapter leads who then worked with their teams to develop each chapter, to an agreed timetable.

Development of the Acquire chapter
The Acquire chapter lead was Emma Place, the Subject Librarian for Veterinary and Dental Sciences at Bristol University. The team also included Fiona Brown from the University of Edinburgh, Douglas Grindlay from the University of Nottingham and Clare Boulton from RCVS Knowledge. It was agreed that Emma Place and Fiona Brown would write most of the content, with expert input and peer review by Douglas Grindlay and Clare Boulton, throughout the process. Emma Place and Fiona Brown held telephone discussions to agree who would contribute to each section of the chapter and to discuss the development of the chapter. Content and edits were also discussed by email with the chapter team.
The Acquire chapter looked at how to find the best evidence to answer the clinical question the veterinarian wanted to answer. This included the general principles of searching bibliographic databases and which databases to use. The team was conscious that providing information to veterinarians in practice on how to do this is very different to information provided to staff and students in veterinary schools. Resources available to staff and students in universities are often not available to veterinarians in private practice.

> "An obstacle to the widespread practice of EBVM is access to the databases and journals that can hold high quality evidence. Veterinary practices and individual veterinarians will need to actively investigate the most practical and affordable strategies for accessing the best available evidence in their given situation." (5)

The team was aware that CAB Abstracts has been identified as giving the greatest percentage coverage of journals with veterinary content (6), and for veterinary librarians is generally seen as a key database for EBVM. However, as a subscription database, veterinarians in practice may not have access to this resource. It was, therefore, essential that the chapter include information on how veterinarians could access free-to-use databases, such as PubMed and Google Scholar. Some professional organisations provide access to bibliographic databases as part of their membership package and key examples of this were given in the chapter. The chapter also included information on how to access the publications identified by a search, such as searching for open-access journals, using resources provided by professional organisations and using professional, public, university and national libraries.

The first draft of the chapter was submitted on 8 May 2015. The draft chapter included the following sections:

Where to find the evidence (including sub-sections on synthesised evidence, bibliographic databases, access to databases, other sources of information and access to publications

How to find the evidence (including sub-sections on a database search strategy, search terms, Boolean operators, search tips, limits and filters, refining your search and citation searching)

Managing your search results (including sub-sections on reporting a search and reference management tools)

The learning objectives for the Acquire chapter were identified as:

Identify which information sources can help to find the best evidence for veterinary medicine

Establish how to get access to these resources for your own clinical practice

Translate a clinical question into a database search strategy and understand the fundamentals of efficient searching

Document and report your search strategies in standard formats for reporting and peer review

At the end of May the project review team provided feedback on the draft, with further revisions to be submitted by 18 June. A revised chapter, including a summary and a list of references and links to all the websites and resources which were referenced within the chapter, was sent to Douglas Grindlay and Clare Boulton for review. The final draft was submitted on 16 June 2015, with a quiz with formative multiple choice questions added later. The project team agreed that the working name 'GROEL' would be changed to EBVM Learning. Following further review and editing by the chapter teams, EBVM Learning went live on 30 October 2015 and was launched at the RCVS Skills Day, with its management being handed to RCVS Knowledge.

How the tutorial is being used

EBVM Learning is currently used in undergraduate teaching at the University of Bristol School of Veterinary Sciences and is being actively promoted at all UK veterinary schools. Veterinary medicine at the University of Bristol is taught over five years, with a vertical theme in EBVM being taught in Years 1 to 4. The EBVM Learning tutorial is embedded into practical sessions for EBVM in Years 1 to 3. Ask is taught in Year 1, Acquire in Year 2 and Appraise in Year 3. The students are given timetabled time to work through each chapter and this is followed by a practical session based on the chapter. In Year 4 students are required to create a Critically Appraised Topic (CAT), which gives the opportunity to consolidate what has been learned.

Year 1 students are given Web of Science and Endnote training. Year 2 students are given a two-hour CAB Abstracts and Medline tutorial two weeks before the Acquire practical. This allows them time to practice using CAB Abstracts and to develop their search skills to support EBVM.

The Royal (Dick) School of Veterinary Studies at the University of Edinburgh is currently developing an Evidence-Based Research Methods in Clinical Practice course as part of its online Advanced Clinical Practice MSc programme. This course will be compulsory and will include aspects of the EBVM Learning tutorial.

RCVS Knowledge has provided the project team with Google analytics from 18 November 2015 to 23 May 2016. This shows that people have logged onto EBVM Learning from all over the world. Most of the visits have been from UK, Russia and the USA, followed by Australia, the Netherlands, Brazil and Germany.

There have been over 4,500 sessions (visits) and over 24,000 page views. Users viewed, on average, five pages per visit and spent, on average, 7.46 minutes per visit. 27% of the sessions were from returning users.

Future developments

The next stage is to gather feedback on EBVM Learning and use this to further develop the resource. It is hoped that EBVM Learning can be developed to include more modules and the project team would welcome suggestions for these.

Ideas for longer term goals for the EBVM Learning Consortium include developing wiki tools to assist veterinary professionals to work together in creating Knowledge Summaries; developing a MOOC to increase the teaching and understanding of EBVM; assessments of EBVM teaching and integration of EBVM Learning into specialist training.

The consortium is also interested in improving and standardising the teaching of EBVM to undergraduate and postgraduate students at veterinary schools internationally

The EBVM Learning Consortium plan to meet to discuss and plan future developments at 'Veterinary Evidence Today: The 2016 EBVM Network Conference' which is being held in Edinburgh in November 2016.

Conclusion: It is hoped that the development of this resource will increase awareness of EBVM in the veterinary profession, and allow students and practitioners the opportunity to develop the skills needed to utilise EBVM in everyday clinical practice. Furthermore, it is hoped that the EBVM Learning Consortium will continue to develop as a community of practice in the area of EBVM.

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