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Evidence based veterinary medicine: a practice based example

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ABSTRACT: Evidence-based veterinary medicine underpins clinical governance and allows us to make decisions each day based on current, relevant knowledge. Rather than a set of rules, evidence based veterinary medicine is a guide which can assist the thinking and questioning process. This principle can facilitate clinical audits and allow the development of SOPs and guidelines.

Keywords: evidence; governance; audit; decision

What is evidence based veterinary medicine?

Evidence based veterinary medicine (EBVM) at first glance might look intimidating, but be assured that there are a variety of tools at your disposal to help with every step. This article aims to outline how EBVM can be used in practice to inform decision making, improve patient care, perform a clinical audit and implement protocols. The author hopes to inspire others to immerse themselves into this concept and develop a culture where questioning, investigating, and changing practice is encouraged. This will follow a case-based example from the author's practice.

The RCVS Day One Competences (2014) expects all Registered Veterinary Nurses (RVNs) to 'understand and apply the principles of clinical governance and practice evidence-based nursing'. Every day, RVNs make decisions in practice, but it is important to guide them with current, quality evidence. Utilising the evidence, in combination with clinical expertise and both patient and owners needs, will ultimately allow RVNs to thrive whilst providing the best care to patients. EBVM may assist in designing or improving practice protocols and clinical audits.

Clinical curiosity

Finding a starting point, is often the most difficult part. When nursing patients and observing procedures, begin to question the why's and the how's. 'We've always done it this

way' or 'We were taught this at university' are not evidence-based claims nor contribute to clinical governance. Basing decisions from opinion alone can be biased as they are influenced by the person's positive and negative experiences (Cartridge, 2020). The chosen topic can be any part of clinical work but would be most effective if it is relevant, measurable and aims to improve patient care and nurse satisfaction.

An alternative approach is to assess recorded errors or topics that the team has voiced concerns about and use these as areas to develop. RVNs rarely intentionally provide sub-optimal care and it is often the processes in the system or lack of, that leads to the error (Kerrigan, 2020). Facilitating a reflective practice culture is central to supporting RVNs to be open and honest and enables learning to take place to prevent errors occurring again (Kerrigan, 2020). The author's practice utilises Vetsafe, run by the Veterinary Defence Society to allow all clinical staff to anonymously record data that cause patient harm or near misses. This allows the team to understand why errors occur and learn from them to share further learning (VDS, 2021).

The author chose to audit the application of cold therapy in practice. During recent nursing case discussions, cold packing was identified as being inaccurately prescribed. There was a large variation the frequency and duration that cold packing was performed in surgical patients post-operatively. Simultaneously a knowledge review summarising the correct use of cold therapy

was released in the Journal of Small Animal Practice (Wright et al., 2020).

Once the topic is chosen, the RVN should seek to find what best practice is. When contemplating the topic, break it down into mini-questions to enable it to be critical and specific. It is helpful to consider the ‘PICO’ method to formulate a precise question which will ease the search for evidence, (EBVM, 2015a). The PICO method is easy to use, as demonstrated in Table 1.

Based on the mini-questions that are derived, keywords should be chosen. Based on the PICO questions derived, the author chose the keywords ‘canine’; ‘feline’; ‘cold-packing’. It is necessary at this point to think about alternative terms for each keyword, whether that be different spellings or synonyms. The author deciphered that ‘feline’ should also be considered as ‘cat’, ‘cats’, ‘felis’ and ‘felines’.

Sourcing the evidence

There is a significant lack of available published evidence for veterinary medicine in general. Furthermore, the existing evidence can be difficult to access to those outside of academic institutions without incurring a fee. Veterinary practice does not have a centrally managed health care system, nor the same investment in research as the human medicine field does (EBVM, 2015b).

When looking for research, not all study designs are equal (EBVM, 2015b). The best available may not be the best, but this is perfectly acceptable (EBVM, 2015b). Arlt and Heuwieser (2016) recently published a ‘staircase’ metaphor illustrating how evidence can be ranked and assessed with preference. This begins with strongest evidence at the top, with each step down becoming weaker and less reliable. The highest evidence types available are meta-analysis and systemic reviews which aim to combine data and information from numerous sources to address a question (EBVM, 2015b). Synthesised

evidence summarise the evidence from various studies so are a time efficient method for obtaining the consensus (EBVM, 2015b).

This evidence is most commonly published in peer-reviewed journals which are accessible via numerous databases such as PubMed or RCVS Knowledge. However, if these are not available case reports, conferences papers and practice guidelines, such as the RECOVER Guidelines are often available online. The databases themselves, as well as the EBVM online guide (2015) provide detailed training tutorials on how to efficiently search for research. Do not be defeated by finding no evidence. This, is an achievement as the search has identified a knowledge gap.

It is vital to keep a record of the searches that are performed and the references that were found on each search (EBVM, 2015b). This should include the date of the search; the name of the database; the terms used in the search; any limits such as date that were applied (EBVM, 2015b). The RCVS Knowledge provides detailed guidance in collating search outcomes in order to produce a knowledge summary.

Reviewing the evidence

Once the evidence has been sourced, the evidence should be critically appraised. The study design and methodology, the data and the conclusions should be assessed to ensure that it is relevant, (Cartridge, 2020). The below questions can act as starting points.

- Is the sample representative? *To infer the results onto the population of interest, they must reflect similar characteristics. Take special note of the sample size and any inclusion and exclusion criteria.*
- Was bias eliminated? *Bias can lead to distortion of the results. Consider if the subjects were selected randomly, or if the person measuring the results was blinded.*

- What were the results compared to? *Ideally the results should be compared to a control group of similar characteristics that received either no intervention or a placebo treatment.*
- Are the conclusions reliable and valid? *It’s important that the measurements are performed consistently, and that subjectivity is minimised. This can be achieved using a validated scale; calibrating equipment; and maintaining the same researchers throughout.*

The knowledge search identified that there is limited data in small animals confirming the benefits of cold therapies. One study evaluating the effect of cold compression therapy in canine patients post tibial plateau levelling osteotomy, confirmed they experienced decreased pain, swelling and lameness (Drygas et al., 2011). Wright et al. (2020) concluded that the application of cold therapy in acute and inflammatory pain conditions is justified from an evidence-based one-medicine point of view. In human medicine, cold therapy improves recovery and transiently improves pain scores, whilst reducing opioid consumptions (Nabiyev et al., 2018). Cold packing should be applied for 15-20 minutes, every six to eight hours in addition to an already established analgesia protocol (Wright et al., 2020).

Conducting an audit

Once you have a sound knowledge base, clinical audits can be used to investigate how closely best practice is followed. Clinical audits can help to raise clinical standards. There are three main types, categorised by what each assesses and what each compares the results to. The author conducted a process audit, by assessing the duration and frequency of cold packing was carried out and comparing the results to pre-set guidelines. Process audits can also compare results to SOPs to see if they are being followed or even instigate the development of them (Mosedale, 2018).

Outcome audits aim to assess how a clinical task is performed and the results are then compared to a benchmark (Curtis, 2020). An example would be the complication rate of a specific procedure, compared to nationally published rates. Whereas structure audits focus on how resources and availability affect results (Curtis, 2020).

The way you obtain the data will differ depending on the topic. Retrospective data collection can take place by assessing

Table 1. Original query: Is cold packing performed correctly in practice?

Patient – Population +/- the problem.	Post-operative canine and feline patients
Intervention – Treatment or exposure.	Cold-packing
Comparator – Comparison or control group.	Consistent standard by all nurses
Outcome – Clinical outcome.	Provide analgesia
Are post-operative canine and feline patients prescribed cold packing, receiving the treatment to a consistent standard by all nurses to provide analgesia?	

previously completed documents such as hospital sheets and anaesthesia monitoring charts. Practical audits can be performed by assessing and scoring colleagues performing tasks. The author chose to distribute a survey online requesting the clinical team to self-assess their capabilities in an anonymous manner.

I have the results, now what?

The data must be streamlined to ensure all results are in the same format, i.e. transforming decimals to percentages or vice versa. The data can often be compared to benchmark rates immediately. The author asked 'How long should cold packing be performed' – 67% of the respondents answered incorrectly, selecting time durations shorter than best practice advises. When discrepancies between clinical practice and protocols/benchmarks arise, they can be investigated further by assessing trends and correlation in data. It is important to remember that correlation is not always an implication of causation (Curtis, 2020).

The author discovered that time was identified as the most common barrier to performing cold packing effectively. Additionally, unfamiliarity with the theoretical knowledge of the task was identified as a barrier. The author used this as an indication that further education was required to achieve best practice. This was designed as a lecture style presentation and the creation of an SOP.

Making change

Making change can impact numerous factors, all of which must be considered. It may be helpful to start the change on a personal level to identify and address any potential problems, before changing protocol at a practice level. For example, the author performed cold therapy according to the standard operating procedure for one month before sharing the protocol with others. The need for more equipment was identified as well as an improved communication channel between the nurses and clinicians.

Before making the change, it is helpful to reflect on previous practice change. Consider which colleagues helped to facilitate the change and those who were a barrier. Colleagues who have performed audits themselves, may act as a mentor. The author's clinical director provided

invaluable support and guidance throughout the audit process.

Disseminating the change

The results showed that the application of cold therapy was not consistent, so the author implemented a standard operating procedure (SOP) based on evidence-based medicine. SOPs describe the critical and sequential steps to perform a task to assure the expected result (Macdonald et al., 2017). It is vital that SOPs are frequently reevaluated based on evidence-based medicine. Fraser (2019) suggests that whilst they incorporate evidence, they lose sight of the individual and are unlikely to accommodate the needs of patients with comorbidities. However, for treatments and procedures they can allow a level of consistency to be applied across a practice.

The SOP was presented alongside the lecture to improve knowledge across the whole practice. There are numerous other verbal and non-verbal methods of distributing the results of the audit and any changes. Email allows information to be read and processed before discussions begin in person but does not ensure that the receiver has read or understood the materials. Whereas, conversations during journal clubs, practice meetings, nursing case discussions or ward rounds allow questions to be raised and addressed (EBVM, 2015c).

Now do it all again...

By this point, the author had identified a problem; reviewed current evidence; conducted an audit; analysed the results; implemented and communicated the changes. Now is the time to 'Assess' by evaluating the impact of the change in practice. Has the SOP and education achieved the aim of working according to evidence-based medicine? The author implemented 'nursing case discussions' for the ward nurses, where each inpatient was discussed holistically cage side. Asking open and closed questions such as 'Have you read and understood the latest SOP?'; or 'How do you feel about cold packing?' allowed the author to gauge the general level of understanding and compliance.

Many will determine this as a natural conclusion, but this is indeed the beginning of the next step. Evidence based medicine is continually changing and evolving so consider the audit as a cyclical process whereby when the end is reached, the process is re-started. This can be started by reassessing if there are any updates in literature that

require the SOP to be altered. Or whether the protocol is being adhered to by assessing hospital sheets or redistributing questionnaires. This helps to create an ethos of reflection which is essential when improving competence (EBVM, 2015c).

The author is currently conducting a re-evaluation audit. The author would like to see a more consistent set of results, demonstrating that cold packing is being carried out according to the SOP which is based on a frequency and duration shown to provide analgesia.

Conclusion

Evidence-based veterinary medicine can be used to help guide decisions in practice every day. Changing our perception of problems or areas where nursing is sub-optimal is essential. Focusing on how to learn and explore the area further will help to improve clinical governance, patient care and nurse satisfaction. Conducting clinical audits can be useful in instigating a sustained change within the whole team which may lead to the development of further training, SOPs and frameworks. Whilst this may seem overwhelming at first, splitting the process into manageable steps and accessing the resources discussed can help ease the process.

Disclosure statement

No potential conflict of interest was reported by the author.

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