Practical Application of Evidence-Based Practice

Michelle A. Giuffrida, VMD, MSCE, DACVS

KEYWORDS

- Evidence-based practice • Evidence-based medicine • Clinical epidemiology

KEY POINTS

- Evidence-based practice (EBP) is the integration of clinical expertise, client values and preferences, and best research evidence into the decision-making process for clinical care.
- Practical application of EBP involves asking well-focused questions, searching the literature for relevant research evidence, critically appraising the evidence, and applying findings to patient care.
- A high-quality evidence base is lacking in many areas of veterinary medicine. Practitioners must develop new skills to efficiently identify relevant evidence and examine its internal and external validity.
- Basic understanding of PICO question format, literature search strategies, and clinical epidemiology principles (chance, bias, confounding, and generalizability) are valuable to veterinary EBP practitioners.

Veterinarians desire to provide best-quality medicine to patients, and to counsel clients wisely during the medical decision-making process. Pet owners value our experiences and skills, but they also depend on us to provide care that reflects contemporary knowledge and standards of care. High-quality clinical practice requires veterinarians to be aware of new research and continually integrate relevant findings into patient care. Evidence-based practice (EBP) provides us with a practical framework to achieve this.

EBP is based on the principles of clinical epidemiology, the branch of medicine concerned with conducting, appraising, and applying research studies that focus on patients' medical care and disease outcomes.[1] A contemporary definition of EBP is the integration of clinical expertise, client (or patient) values and preferences, and best research evidence into the decision-making process for clinical care.[2] Clinical expertise is the veterinarian's knowledge base, skills, and personal experiences. Clients'

Disclosure Statement: The author has nothing to disclose.
Small Animal Surgery, Department of Surgical and Radiological Sciences, Davis School of Veterinary Medicine, University of California, One Shields Avenue, Davis, CA 95616, USA
E-mail address: magiuffrida@ucdavis.edu

values and preferences include their reasons for pet ownership, past experiences, financial resources, emotional attachment, and general medical knowledge. Best research evidence refers to research findings that are relevant to the individual and clinical scenario, and ideally based on sound scientific methodology.

A practical application of EBP involves the following steps:

- Asking a well-formulated question based on a real clinical case or problem
- Acquiring relevant research and information
- Appraising the strength and relevance of the evidence
- Applying the findings to the actual clinical scenario

For most clinicians, successful application of EBP will require developing new clinical epidemiology skills, specifically those related to appraising and interpreting research evidence.[3] This article gives particular attention to the appraisal step of EBP, with a focus on understanding and applying basic epidemiologic principles.

ASKING A QUESTION

The EBP process begins by assessing the patient and articulating a question or problem of interest. Not every patient problem requires a formal application of EBP. In many scenarios, effective diagnostic tests or treatments are established, prognosis for disease is known, or perhaps the client has no interest in moving forward. Relevant EBP questions arise when confronted with the following:

- Unfamiliar species
- Unusual clinical signs or test results
- Rare disease processes
- Common conditions for which there are multiple tests or treatments
- Conflicting recommendations and opinions

Once you have identified the clinical problem, the next step is to formulate a concise, specific, answerable question. A recommended approach is to build questions using PICO, a mnemonic that provides a structured, easy-to-remember formula for creating EBP questions (**Table 1**). A focused and specific question will facilitate the next step in the process, which is to develop a list of publications that are relevant to your clinical problem.

ACQUIRING INFORMATION

Research literature can be categorized into 3 main forms:

- Primary literature: original scientific articles that describe conduct and results of experimental and observational research
  - Aims to answer specific questions or test hypotheses
  - Original scientific journal articles peer-reviewed by experts
  - Difficulties and limitations: large volume; findings of different studies may conflict; rigor and validity of research varies; some topics are studied more than others
- Secondary literature: interpretation, analysis, and summary of primary sources
  - Aims to synthesize existing knowledge on a particular topic, using scientific (systematic) or nonscientific (narrative) methods
  - Textbooks, systematic reviews and meta-analyses, narrative review articles, knowledge summaries, editorials; often peer-reviewed or peer-edited by experts