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What is Evidence-Based Medicine (EBM)?

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Patient Care Model

The most common definition of EBM is taken from Dr. David Sackett. EBM is "the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research." (Sackett D, 1996)

EBM is the integration of clinical expertise, patient values, and the best evidence into the decision making process for patient care. Clinical expertise refers to the clinician's cumulated experience, education and clinical skills. The patient brings to the encounter his or her own personal and unique concerns, expectations, and values. The best evidence is usually found in clinically relevant research that has been conducted using sound methodology. (Sackett D, 2002)

The evidence, by itself, does not make a decision for you, but it can help support the patient care process. The full integration of these three components into clinical decisions enhances the opportunity for optimal clinical outcomes and quality of life. The practice of EBM is usually triggered by patient encounters which generate questions about the effects of therapy, the utility of diagnostic tests, the prognosis of diseases, or the etiology of disorders.

Evidence-based medicine requires new skills of the clinician, including efficient literature-searching, and the application of formal rules of evidence in evaluating the clinical literature.

The Steps in the EBM Process

The Patient	1. Start with the patient -- a clinical problem or question arises out of the care of the patient
The Question	2. Construct a well built clinical question derived from the case
The Resource	3. Select the appropriate resource(s) and conduct a search
The Evaluation	4. Appraise that evidence for its validity (closeness to the truth) and applicability (usefulness in clinical practice)
The Patient	5. Return to the patient -- integrate that evidence with clinical expertise, patient preferences and apply it to practice
Self-Evaluation	6. Evaluate your performance with this patient

Lifelong learning model

The practice of evidence-based medicine is a process of lifelong, self-directed, problem-based learning in which caring for one's own patients creates the need for clinically important information about diagnosis, prognosis, therapy and other clinical and health care issues.

Instead of routinely reviewing the contents of dozens of journals for interesting articles, EBM suggests that you target your reading to issues related to specific patient problems. Developing clinical questions and then searching current databases may be a more productive way of keeping current with the literature.

Evidence-based medicine "converts the abstract exercise of reading and appraising the literature into the pragmatic process of using the literature to benefit individual patients while simultaneously expanding the clinician's knowledge base." (Bordley DR, 1997).

Why is EBM important?

Information Needs

Studies of information-seeking habits of physicians, have shown that when asked, physicians reported that their practice generated about 2 questions for every 3 patients. Only 30% of physicians' information needs were met during the patient visit, usually by a colleague. Reasons for not using printed resources included office textbook collections too old, lack of knowledge of appropriate resources, and lack of time to find the needed information. (Covell DG, 1995)

When actually observed, investigators found that physicians had about 5 questions for each patient. 52% of these question could be answered by the medical record or hospital information system. 25% could have been answered by published information resources such as textbooks or MEDLINE. (Osheroff JA, 1991)

However, studies have also shown that when clinicians have access to information, it changes their patient care management decisions.

In 1998, Dr. David Sackett, using an "evidence cart" on rounds, reported that of 71 information searches to answer clinical questions, 37 (52%) confirmed the management decision, but 18 (25%) lead to a new therapy or diagnostic test and 16 (23%) corrected a previous plan. (Sackett D, 1998)

Similar results were report by Crowley et al in 2003. The CAR study showed that of 520 clinical questions for which answers were sought in the medical literature, in 53% of these cases the literature confirmed the management decision, but in 47% of these cases the literature changed the medication, diagnostic test, or prognostic information given to the patient. (Crowley S, 2003).

Is the Evidence Available?

According to G. Michaud, "Most primary therapeutic clinical decisions in 3 general medicine services are supported by evidence from randomized controlled trials. This should be reassuring to those who are concerned about the extent to which clinical medicine is based on empirical evidence. This finding has potential for quality assurance, as exemplified by the discovery that a literature search could have potentially improved these decisions in some cases." (Michaud G, 1998)

The Study Data: of 145 cases and clinical decisions analyzed:

- 31 could be supported by a randomized controlled trial
- 65 were supported by a head-to-head trial (not a placebo-controlled trial)
- 23 were supported by case-control or cohort studies
- 4 were supported by case series reports
- 22 could not be supported with a study from the literature

Evidence-Based Medicine Issues

Opponents	Proponents

EBM is "old hat". Clinicians have been using the literature to guide their decisions for a long time. The label is new.	The new focus on EBM "formalizes" that "old hat" process and filters the literature so that decisions are made based on "strong" evidence.
EBM is "cook book medicine". It suggests that decisions are based solely on the evidence, down playing sound clinical judgement.	EBM should be one part of the process. Decisions must be blended with individual clinical expertise, patient preferences and when available good evidence.
EBM is the mindless application of population studies to the treatment of the individual. It takes the results of studies of large groups of people and tries to apply them to individuals who may have unique circumstances or characteristics, not found in the study groups.	The last step in the EBM process is to decide whether or not the information and results are applicable to your patient and to discuss the results with the patient.
Often there is no randomized controlled trial or "gold standard" in the literature to address the clinical question.	Clinicians might consider the "evidence pyramid" and look for the next best level of evidence. Clinicians need to understand that there may be no good evidence to support clinical judgement.
There is often great difficulty in getting access to the evidence and in conducting effective searches to identify the best evidence.	Librarians can help identify the best resources and teach clinicians effective searching skills.

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University of South Dakota
 414 E Clark St.
 Vermillion SD 57069
 1-877-COYOTES | Work 1-877-269-6837

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