

A PRACTICAL APPROACH TO EVIDENCE BASED MEDICINE

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The term “evidence-based medicine” (EBM), defined as “the explicit, judicious, and conscientious use of current best evidence from health care research in decisions about the care of individuals and populations”,^{1,2} has become an integral part of excellence in clinical practice with primary emphasis on clinical judgment and education rather than on healthcare policy. The importance of EBM can be emphasized by the presence of only 6 citations on searching Medline for “evidence based medicine” in 1993,³ which have now increased to 28973 in early 2008. Even the lay press has recognized “evidence-based medicine” being one of “the ideas of 2001” according to the New York Times Magazine.⁴ Research literature is constantly changing with a particular practice being considered best today may change next year. This makes the task of the clinicians to stay current very difficult but by applying tools of EBM, this can be achieved with much ease. This paper will discuss a simple 5 steps approach involved in the practice of EBM which include: asking an appropriate question, searching for the evidence, critically appraising the literature, applying the results to clinical practice and finally evaluating the outcome.⁵ It is important for all clinicians to develop these simple EBM skills in order to use scientific evidence into their clinical practice to deliver optimal patient care.

Why practice evidence based medicine?

The most important reason for practicing EBM is to improve the quality of care given to the patients. EBM help the clinicians to identify modalities that are beneficial and also those which are not effective and may also be harmful. It also helps promote critical thinking about a clinical scenario. It demand that the clinicians maintain an open mind and constantly search and apply practices that are scientifically proven to be effective and to eliminate those which are not.

Steps of EBM:

Step 1: Ask an appropriate question.

The first and the most important step in practicing EBM, is to determine a primary question or a problem.

Looking simple, this is often difficult and if not done appropriately, would result in creating further problems at later steps. In a clinical scenario, questions may be unstructured and complex, and may not be clear in our minds. The practice of EBM should begin with a well structured clinical question. Good clinical questions should be clear, directly focused on the problem at hand, and answerable by searching the medical literature.⁶ A useful framework for formulating an appropriate clinical question is suggested by Sackett & colleagues.² They proposed that a good clinical question should have atleast three and sometimes four components:

- Patient or Problem;
- Intervention;
- Comparison (not mandatory);
- Outcome of interest.

This has been referred to as the PICO (Patient / Problem, Intervention, Comparison, Outcome) or PIO (Patient / Problem, Intervention, Outcome) approach.

Step 2: Search for the evidence.

Once the question has been formulated, the next and probably the most important step is to find the relevant evidence in the literature that will help in answering the question. Several sources of information are available of which the mostly used are textbooks and journals but some also recommended looking at the unpublished data and asking colleagues and experts in order to overcome the publication bias. Secondary sources of summarized evidence is also available which may help provide quick evidence based answers to specific clinical questions including Clinical Evidence, etc. Other important sources of evidence include the online electronic databases, which allow access to numerous articles very quickly and such databases are increasing their resources regularly. The ability to search these databases effectively is an important aspect of EBM. It is extremely important for all healthcare professionals to be familiar with the basic search skills and this may be incorporated into their activities in the form of formal courses. There is also a tendency in the clinicians to have a bias towards the selection of evidence; a reasonable approach would be to involve more than one individual to

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review the literature ensuring objectivity and transparency in the review process.

Tips for searching evidence:

Develop an appropriate list of keywords based on the question that needs to be answered.

Search the online databases (PUBMED (MEDLINE), EMBASE, CINAHL, Cochrane Library).

Narrow down the search by applying limits to the initial search (PUBMED).

Step 3: Critically appraise the literature.

This is the third step in the EBM and evaluates the collected literature based on the formulated question for validity and clinical usefulness. We are all aware that the amount of literature available on a particular topic is abundant but all of it is not of the same and high quality. It is therefore important to filter out the unreliable data as the application of it could result not only in harming the patients but also wasting the healthcare resources which may be a major issue in some countries. All evidence must be appraised in the following areas:

- Validity.
- Importance.
- Applicability to the clinical scenario.

When appraising clinical research, important things to determine are the question being asked, whether the study design is appropriate for that question and has the study been executed properly. Care should be taken to eliminate all types of bias as much as possible. It is therefore important for clinicians involved in EBM to develop critical appraisal skills which involves learning how to ask key questions about the validity of the evidence and its relevance to a particular clinical scenario. Several tools for appraising research articles are available (some on the internet) which can be helpful in appraising different types of study designs including randomized controlled trials, systematic reviews, cohort studies, etc. It is also important to remember that RCT's are not always the best type of studies to answer every question.

Step 4: Apply the results to clinical practice.

Performing the previous 3 steps will result in the appearance of a concrete piece of evidence which should be valid and important for the question in consideration. Now is the time to combine the clinical expertise and experience with the evidence generated to improve the outcome of specific patient scenarios. It is also important to remember that patient's values and circumstances while making such decisions. The evidence regarding both efficacy and risks

should be fully discussed with the patient in order to allow them to make an informed decision. This approach allows the formation of a decision in consultation with the patient in the presence of good evidence and is consistent with the fundamental principle of EBM i.e. integration of good evidence with clinical expertise and patient values (7). The decision to apply evidence should also take account of costs and the availability of that particular treatment in the location under consideration.

Step 5: Evaluating the outcome.

Whether the intervention was appropriate and resulted in good clinical outcome for a certain group of patients, in a particular clinician's hands, will only be answered by careful prospective outcome research. This outcome research will also help us improve on any or all of the four steps discussed above. As Strauss and Sackett have suggested, we need to ask whether we are formulating answerable questions, finding good evidence quickly, effectively appraising the evidence, and integrating clinical expertise and patient's values with the evidence in a way that leads to a rational, acceptable management strategy (7). Formal auditing of performance may be needed to show whether the EBM approach is improving patient care.

Conclusion:

Every clinician must understand the importance of applying best research evidence to patient care – the essence of EBM – to improve the overall quality of healthcare. A simple approach, as outlined, can be useful to achieve these objectives. It is imperative that the research should not override the clinical experience and patient values, but should integrate with it in order to provide the generalizability in the patient care.

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