

EVIDENCE-BASED MEDICINE: WHAT IS THE EVIDENCE?

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At its core, evidence-based medicine is a systemic approach to utilizing the best scientific information to make decisions regarding diagnosis and treatment for individual patients. It involves learning a set of skills to access and evaluate the medical literature and select the most accurate information for use in clinical decision-making. The term “evidence-based medicine” (EBM) originated at McMaster University in Canada, and first appeared in the medical literature in 1992.¹ While the term may appear to be self-explanatory, its meaning and relevance to the practice of medicine in Saudi Arabia needs further discussion.

The proponents of EBM believe that it is a marked departure from prevailing medical practice, which they consider to be hampered by the virtual impossibility of accessing and utilizing all the scientific evidence on any one question, leading to suboptimal decision-making in patient care. It is alleged that many clinical decisions are based on incorrect or inadequate evidence and outdated textbooks² and hence are incorrect. EBM is designed to help provide care for patients based on the best scientific evidence currently available. With the current interest in producing explicit practice guidelines, the importance of best scientific evidence becomes even more compelling.

EBM is an appealing concept. It is absolutely logical for physicians to base their therapeutic and clinical decisions on the best scientific evidence. However, there are some particular assertions regarding EBM that remain unsubstantiated.

1. *EBM will have a positive impact on physician performance as determined by improved patient outcomes.* It has been demonstrated in a randomized clinical trial that conventional CME (Continuous Medical Education) had little impact upon the quality of patient care although knowledge in the experimental group rose substantially.^{3,4} However, the same results may apply to the impact of EBM upon the elements of patient care that are necessary to produce improved patient outcomes. If there exists poor physician compliance with established guidelines,⁵⁻⁷ there is no evidence that improved delivery of medical information as taught by the EBM “school” will improve compliance with these guidelines. It remains to be seen whether practicing clinicians who spend time in the library and are able to critically appraise the literature actually have better patient outcomes if they utilize evidence-based

medicine. We are awaiting the evidence to demonstrate that evidence-based medicine really works.

2. *EBM is something new.* In reality, EBM in the form of the scientific method has been at the core of medical practice for decades. As the quality of medical research has improved, so has the knowledge base of the physician. Many physicians already have the ability and tendency to go to the medical literature to find the best information for diagnosis and treatment of their patients. EBM correctly teaches that randomized clinical trials provide the best scientific evidence, and promotes the Cochrane collaboration, which systematically reviews RCTs. However, at this time, the range of topics covered in the Cochrane database is limited and many clinical issues are thus far unaddressed in this format. Furthermore, the evidence from review articles is oftentimes conflicting and the results of meta-analysis may be inconclusive at best.⁸

EBM refers to the “former paradigm” of medical problem-solving by claiming clinicians relied on outdated textbooks and the opinions of experts, which are not necessarily the best resources for current information.¹ Textbooks may be “out of date” the day they are published and may not be the best source of current medical information. However, what is not stated is that textbooks do provide a foundation for knowledge about a disease entity that is necessary in order to pose clinical questions and understand current literature. Are we to discard entirely the views and writings of internationally renowned experts and the authors of textbooks?

Proponents of EBM may be simplistically attempting to reduce the uncertainties inherent in clinical practice without realizing the difficulties involved in using epidemiological data to guide clinical decisions. Even quantitative measures such as NNT, which are designed to tell us how many numbers of patients are “needed to treat,” must be cautiously interpreted, since NNT implies equal distribution of risks between population data and individual patients, which may be a wrong assumption.⁹ Furthermore, NNT is often based on absolute risk reduction data from Western populations, and the resulting NNTs may be misleading when extrapolated to the developing world, where exposures and risk factors such as nutrition, lifestyle and genetics may be significantly different. In addition, NNT is at best a rough approximation rather than an absolute number that reflects

“lives saved” or “hospitalizations prevented,” since it does not take factors such as co-morbidities and patient preferences into account.

When we consider outcomes, even demonstrated evidence must be considered in light of patients’ values and quality of life, as well as individual medical risk factors. We must not underestimate the value of clinical judgments as we integrate evidence-based information into clinical decision-making with individual patients. Here the knowledge, skills, and sensitivities of the practitioners come into play. It is the expertise of the clinician that decides whether and how the external scientific evidence applies to an individual patient. Perhaps this is where medicine is an art as well as a science, and it is here that evidence-based medicine must be viewed as one of many modalities, including performance improvement initiatives and patient satisfaction research, that are all working towards the same goal of improving clinical decision-making.

Introduced to clinicians as primarily a methodology to critique medical literature which replaces outdated textbooks and flawed scientific studies, evidence-based medicine may be perceived as a dogmatic technology. The strength of EBM, however, is its implicit assumption of the clinician’s commitment to his own learning. EBM implies ongoing self-assessment, questioning, seeking out new information and making changes in one’s own professional behavior. It is an approach to self-learning which involves questioning, critical analysis, and continuous self-improvement. The power of evidence-based medicine is in the values it promotes, particularly an open-minded attitude towards seeking out and integrating new knowledge into practice. As Sackett says, evidence-based medicine is a process of life-long self-directed learning.²

Having addressed some of its strengths and limitations, it is clear that evidence-based medicine has an important role to play in the Kingdom of Saudi Arabia. In medical education, it is crucial to instill the value of continuous learning in new physicians. EBM involves questioning and seeking information, and in this sense it is different from an authoritarian approach to teaching and learning that some clinicians have experienced in their training.

Evidence-based medicine is a valuable teaching tool with its emphasis on reviewing medical literature, interpreting results, and implementing new scientific information into practice. This ongoing approach to new information will produce physicians who have a lifelong commitment to their own learning, provided that evidence-based medicine is introduced less as a technology that as a means towards independent, self-directed learning.

Perhaps coining the phrase “evidence-based medicine”

allows us to label, emphasize and promote what many clinicians are already doing as an emerging “new paradigm.”¹

Undoubtedly, increased understanding of research methodology will enable readers to critically analyze medical articles and will facilitate an understanding of sub-group analysis or which types of patients will benefit from which types of treatments. Rather than depicting EBM as a “revolutionary change” in medical practice, it may perhaps be better described as the reinforcement of an active and open-minded approach to new information, which some of us are already practicing. We need new technical skills to access the Internet, but the lasting value of evidence-based medicine lies in continuous self-assessment and a willingness to make changes in our professional behavior. At its worst, EBM claims to be *the* answer to modifying and improving patient care, improving resource utilization and determining health care policy. At its best, EBM is an innovative approach to medical education and the utilization of best scientific information that is one of many modalities that contribute to improving medical practice.

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