

Evidence based Medicine Practice with their Evolution and Application in Current Health Sector

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Abstract:- Evidence-based medicine (EBM) was to make treatment decisions for individual patients after carefully considering all available data. Despite the significant advancements made by EBM, these abilities are essential for modern medicine but are insufficient on their own. Prioritizing relevance above rigor, all doctors should seek out the best evidence for routine practice (Information mastery). To provide a more accurate and dynamic assessment of research quality, EBM has evolved over the past 20 years from the conventional pyramidal hierarchy of studies. When developed with the right approach, clinical practice guidelines can aid physicians and lead to better health outcomes for patients.

Keywords:- Evidence based Medicine, Pyramidal Hierarchy, Health Outcomes.

I. INTRODUCTION

The original meaning of evidence-based medicine (EBM) was to make treatment decisions for individual patients after carefully considering all available data. When doctors practice evidence-based medicine, they use their unique knowledge in conjunction with the strongest external clinical evidence derived from large-scale scientific studies. Modern, enlarged definition of evidence-based medicine: a systematic approach to clinical problem-solving that allows for the integration of excellent research results with clinical expertise and patient-centered objectives.^[1]

➤ History of EBM:

Prof. Archie Cochrane of the Medical Research Council Epidemiology Research Unit I Cardiff authored the 1972 book *Effectiveness and Efficiency: Random Reflections on Health Services*. laid the groundwork for what would later be called evidence-based medicine (EBM), even though the practice of formally evaluating medical interventions through controlled trials was already well-established in the 1940s. These ideas were refined into a workable approach in the late 1980s and early 1990s by groups at North Carolina's Duke University (led by David Eddy) and Toronto's McMaster University (led by Gordon Guyatt and David Sackett).^[2] So that healthcare randomized controlled trials may be more easily reviewed in systematic ways, the UK government supported the formation of the Cochrane Centre in Oxford under the leadership of Iain Chalmers in 1992. It grew into an international network of centers the following year; today, there are thirteen of them, and their job is to

coordinate the work of eleven thousand five hundred researchers. Among the most important things that have contributed to the global dissemination of EBM is the formation of the Cochrane Collaboration.^[3]

➤ Impact of EBM:

At every level of the NHS, the fundamental premise of evidence-based medicine (EBM) remains relevant: treating where evidence of benefit is available, and not treating where evidence of no benefit (or harm) is available. [4] National Institute for Health and Care Excellence (NICE), the Scottish Medicines Consortium, and the All Wales Medicines Strategy Group are among the larger organizations that use health economic analysis in tandem with EBM principles to inform recommendations for which treatments should be available in the NHS through indirectly commissioned health technology assessments (HTAs). From a tactical standpoint, organizations that specialize in evidence-based medicine (EBM) issue evaluations such as HTAs, which primary care organizations and hospital trusts utilize to develop and implement formularies, treatment pathways, and recommendations. Clinicians can better meet the needs of their patients by customizing treatment plans based on their knowledge of the evidence base and the patient's unique risk-benefit profile.^[4,5]

➤ Logic Behind EBM:

One way to make evidence-based medicine (EBM) more appealing to clinicians and increase its adoption is to break down a problem statement into specific questions about the population or individual under consideration, the intervention used, any relevant comparisons, and the results that were taken into account. Refining the problem into specific questions and verifying the existence of proof are the next steps.^[6]

II. COMMON SOURCES INCLUDE

Direct observation—such as an adverse medication response, To decrease the use of interventions that are ineffective, expensive, or potentially dangerous, it is necessary to educate healthcare professionals about the strength of published evidence compared to more traditional and less rigorous sources of information. This will help them rely on their intuition and reasoning more effectively.^[7]

➤ *EBP Stands for "Evidence-based Clinical Practice."*

The definition of evidence-based practice is "Making a conscientious effort to base clinical decisions on research that is most likely to be free from bias and using interventions most likely to improve how long or well patients live." Practice-based evidence-based medicine (EBP) combines individual clinicians' knowledge with the most recent and robust external clinical data derived from systematic research. Healthcare professionals gain the knowledge, abilities, and confidence to provide quality patient care via their unique blend of formal training, on-the-job training, and ongoing clinical experience.^[8] Clinically relevant research from the fundamental medical sciences, as well as patient-centered clinical trials examining the effectiveness and safety of treatment treatments, and systematic reviews make up the best available clinical evidence.^[9]

➤ *The Amount used for Care for Patients*

Evidence is required every day, but doctors often don't have access to it due to factors including a lack of time, outdated textbooks, and a lack of organization in the most recent publications.^[10]

III. A RISE IN CASE-BASED INTAKE REGARDING EBM

A growing number of medical professionals are coming to terms with the fact that their clinical performance might suffer from a lack of ongoing education and training, even after years of practice. Given the current climate of consumer advocacy, reliable data on diagnosis, treatment, prognosis, and prevention is essential.^[11] The same medical literature that doctors have access to is widely available to the general public. Keeping up-to-date information from traditional sources is hindered by the clinician's limited time for information acquisition.^[12]

➤ *Inferences from Evidence-Based Practices*

There is a hierarchy of research designs; external evidence can only supplement, not substitute, for individualized clinical knowledge; and not all evidence is of equal quality.

- Making judgments based on the best available external evidence. 2. judgments are constantly influenced by values.^[13]

➤ *Clinical Practice Decision-Making by Analysis of Data:*

When faced with several viable options, choosing one to pursue is known as decision-making.^[14]

➤ *Identifying the Best Study:*

Type of Question	Suggested best type of Study
Therapy	RCT>cohort > case control > case series
Diagnosis	Prospective, blind comparison to a gold standard
Etiology/Harm	RCT > cohort > case control > case series
Prognosis	Cohort study > case control > case series
Prevention	RCT>cohort study > case control > case series
Clinical Exam	Prospective, blind comparison to gold standard
Cost	Economic analysis

Fig 1 Identifying the Best Study

➤ *What Knowledge of EBM is Necessary for all Practitioners?*

Despite the significant advancements made by EBM, these abilities are essential for modern medicine but are insufficient on their own. Prioritizing relevance above rigor, all doctors should seek out the best evidence for routine practice (Information mastery).^[15] Does it focus on the patient and consider clinical decision guidelines, diagnostic procedures, and treatment options? Do you have a grasp of elementary statistics? Using web-based and/or portable computer-based information and tools for clinical decision-making, having "just in time" information readily available at the point of care, Assess data derived from sources seen as authoritative, such as peers, continuing medical education (CME), presentations, reviews, and recommendations; assess data derived from pharmaceutical salespeople using critical thinking skills.^[16]

➤ *EBM as Lifelong Learning:*

Caring for patients necessitates access to clinically significant information on diagnosis, prognosis, treatment, and other healthcare concerns; Acquiring this information is crucial for practicing evidence-based medicine, which involves lifelong, self-directed, problem-based learning. According to EBM, you shouldn't waste time searching through hundreds of journals for relevant studies; instead, you should focus on reading up on topics that pertain to individual patients' concerns.^[17] Creating clinical queries and then exploring up-to-date databases might be a more efficient approach to staying informed about the research. In evidence-based medicine, "reading and evaluating the literature" becomes "using the literature to benefit individual patients while simultaneously expanding the clinician's knowledge base," from an abstract activity into a practical one.^[18]

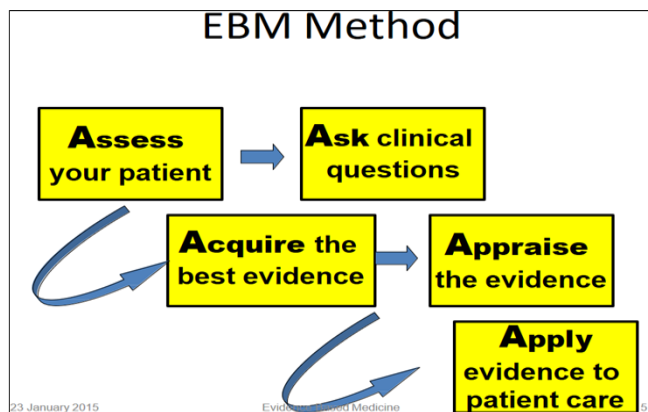


Fig 2 EBM Method

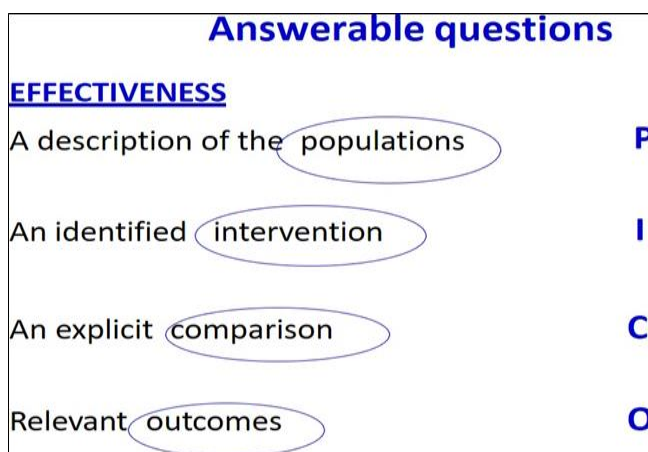


Fig 3 Answerable Questions

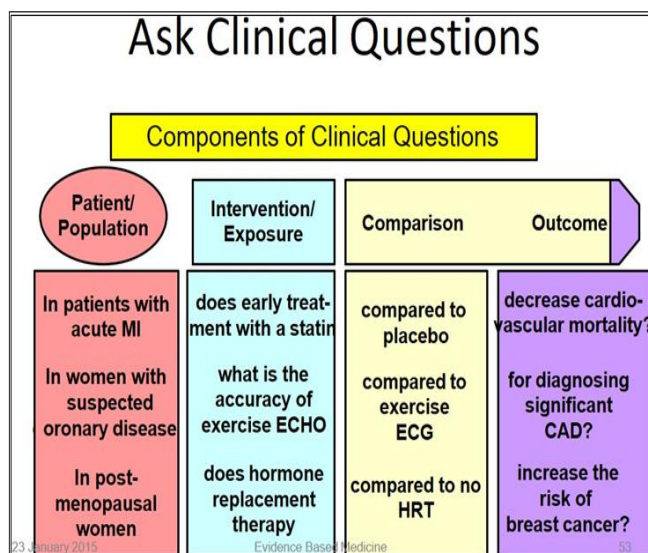


Fig 4 Ask Clinical Questions

IV. CASE STUDY

A. Step-1: How to Frame a Question such that it is Relevant, Focused, and has an Answer:

➤ Clinical Scenario:

In the intensive care unit, a 12-year-old boy was hospitalized. I accidentally ingested an organophosphorous substance four hours ago. The patient was stable hemodynamically but in a comatose state at arrival. The anesthesiologist administered an infusion of atropine to the patient based on his extensive knowledge, competence, experience, and skill set. Regardless, throughout the following two hours, the patient had respiratory paralysis. He was placed on mechanical breathing according to the clinician's excellent judgment. The consultant is now aware of his ignorance and has recognized it. The consultant intended to inject pralidoxime. However, the dose and delivery method were both unknown to him.

➤ Problem with Patients ('P'): How would I Characterize a Cohort of People who were just like me?

Organophosphorus poisoning developed in a male pediatric patient who was 12 years old after he ingested it.

➤ Part "I"—Intervention Plan: Which Exposure, main Intervention, or Prognostic Factor is on my Mind?

Here, the intervention is the optimal dose of Pralidoxime medication.

➤ "C"—Consider an Alternative to the Intervention; what is the main Alternative?

A clinical issue arises in his patient's case while deciding between a low-dose infusion and a single massive bolus dose of Pralidoxime.

➤ "O" as in "Outcome": In this Endeavor, what am I aiming to Achieve?

Recovery from OP poisoning and reduction in illness and death.

B. Step-2:- Literature Search

Printed materials such as textbooks and magazines, as well as digital resources such as databases.

C. Step-3 -The Literature: A Critical Review

After determining the article's goal, checking it for internal validity and relevance, and evaluating its validity based on its intent, a prospective randomized placebo-controlled clinical research of Pralidoxime was done with two similar groups of patients. (Group 1 received a modest dosage, whereas Group 2 received a big dose) The researchers weren't blinded, and block randomization was employed. Next, we will find out how strong of an outcome there was after evaluating two PAM therapy regimens for OP poisoning. To what extent did the therapy work? Since PAM is an imported medicine that costs a pretty penny and is hard to come by, Results were better in the low-dose group compared to the high-dose group. The patient's father is a primary school teacher and cannot afford the medicine's excessive cost; so, the doctor must discover a cure that is

- An Evidence-based Medicine Model with Five Steps:
 - The Art of Crafting an Appropriate, Relevant, Concentrated, and Answerable Question
 - Literature Review
 - Literature Review with Critical Criticism
 - Combining Evidence with Clinical Knowledge and Patient Priorities
 - Assessing the procedure. [19]

both effective and affordable. In resolving the clinical challenge, the results of this study are highly applicable and helpful.

D. Step-4-Values to Patients and Clinical Experience Internationally

Consideration of the patient's values—as a cherished, solitary son of his parents, for instance—allows the physician to draw on the finest available, critically assessed research findings. Expensive therapy is out of the question due to the parent's financial situation; nonetheless, there are no known pharmacological contraindications, and a dosage regimen using 1/16 of the high dose yields superior results.

E. Step-5-A Review of the Procedure:

The clinician's abilities should include recording the results of evidence-based practice, developing management procedures using personal and team experiences, determining whether the evidence applied to his patient, using the most appropriate resource, being aware of other relevant resources, such as practice guidelines, and determine whether the "evidence" worked.^[20,21,22]

➤ *What are the Advantages of using EBM?*

Skills developed in practicing EBM are essential for being a lifelong, self-directed learner; these advantages include minimizing patient care mistakes, reducing treatment costs, and optimizing patient care quality. [23] Reading widely regularly is the surest way to stay informed about what's happening in the world of science and to contribute to the expansion of human knowledge. The practitioner's current knowledge to aid in decision-making, Members of the community who will be receiving evidence-based interventions, researchers who are reducing duplication to find research needs, funders who are identifying research gaps and priorities, and policymakers who are using their present knowledge to inform policymaking all play a role.^[24]

➤ *EBM Misconceptions:*

Table 1 EBM Misconceptions

Misconceptions	Facts
In the absence of solid evidence, EBM serves no use.	What EBM stands for is the idea that patient care should be grounded in the most recent and robust scientific data.
Electronic medical record (EMR) algorithms do not take clinical judgment or knowledge into account.	Determining the best way to implement the evidence requires clinical judgment.
There are only data and numbers in EBM.	Evidence-based medicine (EBM) involves more than just statistics; it requires patient-specific evidence. ^[25,26]

V. CONCLUSION

Integrating clinical practice with scientific discoveries, evidence-based medicine is a developing subject. To provide a more accurate and dynamic assessment of research quality, EBM has evolved over the past 20 years from the conventional pyramidal hierarchy of studies. When developed with the right approach, clinical practice guidelines can aid physicians and lead to better health outcomes for patients. Grasping the various levels of evidence and how clinical recommendations are made is essential for incorporating EBM into everyday practice. The provider has a responsibility to consider their patients' beliefs and preferences when making treatment decisions and to use evidence and recommendations properly. They should also be included in the shared decision-making process.

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