

RECENT TRENDS IN EVIDENCE BASED MEDICINE (EBM)

'Good judgment comes from experience; and often experience comes from bad judgment.' - Unknown

Dr. P. F. Kotur

Keywords : Evidence Based Medicine, Recent Trends, Challenges

Popularity, interest and utility of EBM has increased tremendously ever since the consolidation of its concept about four decades ago, as is evident from the number of citations exceeding 29000 on Pub Med as on today. As more and more number of physicians, have been accepting EBM in their day to day practice, along with its increasing acceptance and popularity, this new paradigm of medicine has been undergoing subtle but noticeable changes, because newer thoughts are constantly being added by the newer users.¹

The notable changes, observed, start, right from its definition through the steps of practice to its application.

However, EBM continues to evolve, to address a number of issues including scientific underpinnings, moral stance and consequences, and practical matters of dissemination and application, thus turning out to become less demanding and more practical.²

1. Changes in the Definition of EBM:

Initially EBM de-emphasized (but not eliminated) intuition, unsystematic clinical experience and physiologic reasoning as sufficient grounds for clinical decision-making and emphasized the systematic evaluation of evidence from clinical research. An initial goal of EBM was to minimize the use of non-documentary knowledge and reasoning in clinical practice and EBM that time got defined as- *non-conscientious, explicit, judicious use of best available evidence to make medical decisions.*³ No time was lost to realize the importance of the deemphasized factors and there were suggestions to include the non-documentary evidences also in the practice of EBM. Thus, EBM got evolved (after several philosophical debates) beyond its initial (mis)conception, that it might replace traditional medicine.

As a result the focus got shifted to integrating patho-physiologic knowledge, clinical expertise and patient preferences in making decisions regarding the care of individual patients. This shift marked a critical but necessary

of the value of alternative forms of medical knowledge and reasoning. EBM is now attempting to augment rather than replace individual experience and understanding of basic disease mechanisms. EBM got redefined as - *the optimal integration of the best research evidence with clinical expertise and patient values.*⁴ Subsequently, the evidences automatically got classified into External evidence and Internal evidence; external evidence means the one tracked down from valid literature and the internal one means the one existing within the clinician in the form his expertise, pathophysiological understanding of a disease and also his intuition. Now EBM is defined as the - *explicit use of valid external evidence combined with the prevailing internal evidence.*⁵

2. Changes in the steps of the practice:

a) Step 1-Formulating a relevant question:

The first step of the popular 'five step approach' of the practice of EBM converts the clinical situation or a medical information into a competent, searchable, focused, pertinent, answerable, single question using the 'PICO' model.³ Though this step appears simple, it requires experience and it has been documented that the students (novices to EBM) find it difficult to follow and practice. So, it has been suggested that instead of a single, focused, pertinent answerable question, 3 or 4 part questions pertaining to each one of the four components of the PICO model may be formulated, which certainly simplifies the first step.⁴ Further it helps the identification of the correct keywords, and thereby facilitates for tracking down of the best available evidence.

b) Sixth step defined:

Though the medical educators had embraced EBM since its introduction as an innovative approach to medical education, the task of teaching clinicians the basic skills of EBM, remains challenging.^{6,7} Hence, EBM skills are being included among the mandated core competencies for residency programs all over the world.⁸ The teachers of EBM encountered several difficulties in teaching the 5 step approach to the clinicians. There was a growing hesitance to accept the strategy in the presence of well established and available methods of treatment or diagnosis because of

M.D., Sr. Prof. of Anaesthesiology
J N Medical College , Registrar, KLE University,
Belgaum - 590010. India
Email : profkotur@gmail.com

the process of socialization of the health profession. The novices thought that they were virtually being “trained” to make decisions under the condition of uncertainty which might make them to lose their ability to differentiate between scientific evidence and what seems to be evident. Therefore, an additional sixth step was introduced wherein clinicians were made to provide answers to the clinical questions based on their current knowledge (internal evidence) before continuing with the remaining steps of the EBM process.⁵

The clinicians using this new step were satisfied that their pre-existing knowledge had been integrated into the EBM approach. They could in addition assess the accuracy of their internal evidence, the grounds upon which their preconceptions were based, and the usefulness of the available literature in supporting a decision for their patient.⁵

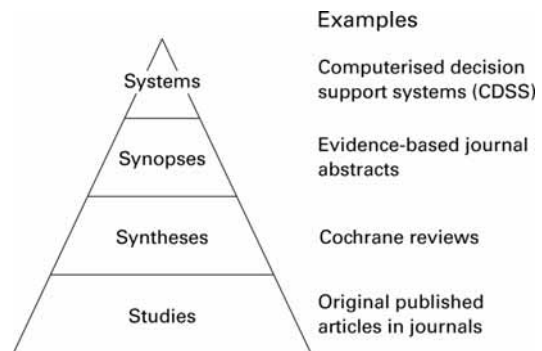
3. Changes in the application :

Agreement between internal and external evidence may vary. The external evidence that is tracked down may *confirm* the internal evidence, validating and strengthening the clinician’s confidence in the decision. The EBM process could also reveal that little evidence exists to support the decision or that the available evidence could be equivocal. In such cases, other factors such as cost or inconvenience to the patient may need to be given greater consideration. Possibly, the best external evidence found may not be in agreement with the internal evidence. This may prove to be a valuable experience for the clinician because it may avoid an error in the decision making, which in turn will promote the routine assimilation of external evidence in clinical decision making. In case of conflicting internal and external evidence, clinicians may have several options. They may change their mind and align it with the external evidence. They may determine that the external evidence is not sufficiently convincing and remain with the original decision. Or, they may choose to discuss with the patient the conflict between the internal and external evidence in a manner that enables the patient to take part in the decision making process. This last approach is recommended because patient preference is considered an essential component of the evidence-based decision making process and decisions often need to be made in the absence of clear research findings.⁵

4. The “4S” evolution of services for finding current best evidence.⁹

Practical resources in good number, to facilitate the method of evidence based decision making have evolved. New and better services are being created through the combined forces of increasing numbers of clinically important **studies**, increasingly robust evidence **synthesis** and **synopsis**

services, and better information technology and **systems**. The need for these resources is spurred by demands of higher quality health services at lower cost. The figure below provides a “4S” hierarchical structure, with original ‘**studies**’ at the base, ‘**syntheses**’ (systematic reviews) of evidence just above the base, ‘**synopses**’ of studies next up, and the most evolved evidence based information ‘**systems**’ at the top. The interested clinicians should begin looking at the highest level resource available for the problem that prompted their search, keeping in mind that none of these “4S” are available free of cost and need a paid subscription for accessibility, except the popular widely used Medline data base which unfortunately is located in the base of the hierarchal triangle



Medline is freely available and the clinical queries screen provides detailed search strategies that home in on clinical content for diagnosis, prognosis, treatment, and aetiology. If none of these services provide a satisfying result or are not accessible to you, it is time to go to the main search screen in Medline’s PubMed and try there. If you still have no luck and the topic is, say, a new treatment (one of your patients have asked about but you don’t yet know about), then try **Google** (<http://www.google.com>). It is incredibly fast and can get you to a product monograph in a few milliseconds. At least you will find what the manufacturer of the treatment claims it can do along with detailed information on adverse effects, contraindications, and prescribing. Unless you are a very slow typist, this is the fastest way to get to almost any service on the internet. It’s worth emphasising that almost all the resources just reviewed are available on the internet.

5. Teaching of EBM- From classrooms to Operating rooms/wards:

Teaching EBM not only equips practitioners with newer knowledge and skills but also fosters their attitudes. Adult learners are motivated more by internal than external factors, which reflects self directed learning. It is quite

essential to apply these principles of adult learning to educate the clinicians to facilitate him/her to develop skills, attitudes and values badly required by the health profession as the half life of knowledge has been found to be shrinking fast.¹⁰ The ultimate aim of improvising patient care can not be achieved with changes in knowledge and skills alone—it would also require changes in attitudes and behaviour. Critical appraisal and EBM teaching that is integrated into clinical practice seems more effective in improving such substantial outcomes including behavioural changes. Recently a systematic review of 4 randomised and 7 non-randomised controlled trials and 12 before and after comparison studies (total 23 studies) from various data sources viz., Medline, Embase, ERIC, Cochrane Library, has been conducted to evaluate the effects of standalone versus clinically integrated teaching in EBM on various outcomes in postgraduates.¹¹ Main outcome measures considered were knowledge, critical appraisal skills, attitudes, and behaviour. Standalone teaching improved knowledge but not skills, attitudes, or behaviour. Clinically integrated teaching improved knowledge, skills, attitudes, and behaviour. The review strongly suggested to move the teaching of EBM from classrooms to patient wards to achieve improvements in substantial outcomes.

Teachers of critical appraisal and EBM should aim to bring teaching out of classrooms into the clinic, but this will require a greater effort.

6. Can EBM be practiced in Developing countries?

Are the systematic reviews that have so far been published relevant and of practical use to those who provide health care in developing countries?¹² The answer is a clear 'No'. Systematic reviews have yet to achieve their potential as a resource for clinicians in developing countries.¹³

Why the Relevance Is Limited ?

- a) *Conditions.* Most of the reviews produced to date address health conditions that are priorities in the developed world and not the major health concerns of the developing world.^{14,15}
- b) *Interventions.* Health care professionals in developing countries sometimes wonder whether their reliance on older, cheaper, “lower tech” approaches has made their practice quite distinct from that of their colleagues in richer regions.¹²
- c) *Features* of the typical health care experience of a patient living in the less developed world differ totally from those in the developed world. The patients in developing country, present very late in the advanced stage of a disease due to delayed diagnosis (due to inadequate diagnostic facilities) and also after a

possible traditional therapy. The paediatric patients are often malnourished and the women are anaemic. The poor infection control, lack of follow up care and less adherence to treatment (due to economical reasons) etc further deteriorate the condition of these patients where as these features of a patient in a clinical trial in a developed country are exactly opposite.¹²

d) Exclusion of studies from the developing world.

Systematic reviews published are based largely on research that has been done in rich countries. Despite the best efforts of many reviewers, relevant studies from developing world are easily be missed because they are not available in the widely used bibliographic databases such as MEDLINE and EMBASE.¹⁶

- e) *Transferability.* Practitioners in low-income countries have questioned the “transferability” of evidence derived from studies conducted in richer nations for application in their setup. Their valid argument is that the most effective treatment in a RCT may not be the most effective treatment when provided in the developing world.¹²

Wherever health care is provided and used, it is essential to know which interventions work, which do not work, and which are likely to be harmful. This is especially important in situations where health problems are severe and the scarcity of resources makes it vital that they are not wasted.¹⁷

There is a need in these developing countries (including all SAARC nations), not for the “best” technology, but for “appropriate” technology having “appropriate evidence”.

References

1. Kotur PF. Editorial-Changing Trends in EBM. *Indian J. Anaesth.* 2005; 49(5): 366-368.
2. R Brian Haynes. What kind of evidence is it that Evidence-Based Medicine advocates want health care providers and consumers to pay attention to? *BMC Health Services Research* 2002, 2:3, <http://www.biomedcentral.com/1472-6963/2/3>.
3. Evidence-Based Medicine Working Group. Evidence-based medicine. A new approach to teaching the practice of medicine. *JAMA* 1992; 268: 2420-5.
4. Sharon ES, W.Scott R, Paul G., R Brian H.-Evidence Based Medicine – How to Practice and Teach Medicine. 3rd Edition, Elsevier-Churchill Livingstone, 2005.
5. F Porzsolt, A Ohletz, A Thim, D Gardner, H Ruatti, H Meier, N Schlotz-Gorton and L Schrott. Evidence-based decision making—the six step approach. *Evid. Based Med.* 2003;8:165-166 www.evidence-basedmedicine.com

6. Guyatt G. Evidence-based medicine [editorial]. *ACP J Club* 1991; 114(2): A-16.
7. *PC. Wyer, S Keitz, R Hatala, R Hayward, A Barratt, V Montori, E Wooltorton, G Guyatt.* Tips for learning and teaching evidence-based medicine: introduction to the series *CMAJ* AUG. 17, 2004; 171 (4).
8. *M Rao, N J Genova.* Practice corner: setting EBM in motion *EBM Note Book* 164 Volume 8 November/December 2003 *EBM* www.evidence-basedmedicine.com
9. R Brian Haynes Of studies, syntheses, synopses, and systems: the "4S" evolution of services for finding current best evidence *Evid. Based Med.* 2001; 6: 36-38.
10. *Lauri E.* Reamer Is there an evidence-based approach to anesthesia education? *Best Practice & Research Clinical Anaesthesiology* Vol. 19,(1): 137-152, 2005 available online at <http://www.sciencedirect.com>
11. What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review, A.Coomarasamy and KS. Khan; *BMJ* 2004; 329: 1017-21.
12. *P Chinmook, N Siegfried, M Clarke.,* Is Evidence-Based Medicine Relevant to the Developing World? *PLoS Medicine* (Journal online) May 2005 (2) Issue 5 e107 Available from www.plosmedicine.org.
13. *Coomarasmy A, Taylor R, Khan KS.* A systematic review of postgraduate teaching in evidence-based medicine and critical appraisal. *Med Teach* 2003; 25: 77-81.
14. *Swingler GH, Volmink J, Ioannidis JPA.* Number of published systematic reviews and global burden of disease: Database analysis.*BMJ* 2003; 327: 1083-1084.
15. *Waters E, Doyle J.* Systematic reviews of public health in developing countries are in train. *BMJ* 2004; 328: 585.
16. *Horton R.* Medical Journals: Evidence of bias against the diseases of poverty. *Lancet* 2003; 361: 712-713.
17. *Volmink J, Swingler G, Siegfried N.* Where to practise evidence-based medicine? *Lancet*, 2001; 357: 724.

CONFERENCE CALENDER - 2008 - 09

1. **28th Annual Conference of Pakistan Society of Anaesthesiologists Karachi, Pakistan**
26th , 27th & 28th January 2008
2. **14th Annual National Conference Indian Society of Critical Care Medicine International Critical Care Congress CRITICARE-2008 Bhopal (INDIA)**
13th- 17th February 2008
Contact : Organizing Secretary
Phone: +91-755-2742212-15,
Fax No. : +91-755-2742689,
Mobile No. : 09893181555
E-mail : drpradipkb@gmail.com,
criticarebhopal@gmail.com, info@criticare2008.org
3. **14th World Congress of Anaesthesiologists WCA-2008, Cape Town, South Africa**
2nd - 7th March 2008.
4. **56th Annual National Conference of ISA ISACON -2008, Jodhpur, India**
26th - 30th December 2008.
Contact : Organising Secretary
ISACON - 2008, Jodhpur
5. **Biennial National Conference Research Society of Anaesthesiology Clinical Pharmacology RSACPCON -2008, Kolkata, India.**
14th. 15th & 16th November 2008.
Contact : Dr Sumanta Dasgupta
Organising Secretary,
Email : drsumanta@gmail.com
Website : www.rsacpcon2008.org
6. **8th Congress SAARC Association of Anaesthesiologists, Karachi Pakistan.**
5th- 8th Feb. 2009
Contact : Congress Secretariat
Suite 1, Office Annex, PMA House,
Agha Khan III Road Karachi - Pakistan 74400
Phone : +92-212765673; Fax : + 92-21-2779718.
E-mail : saarc.anaesthesia@hotmail.com;
Website : www.saarcaa.com